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Candy maker, software firm in legal battle

By Jake Kirchner
CW Washington Bureau

In a case that observers say could have a major effect on all software developers, Mars, Inc., the multibillion-dollar candy maker, is locked in a bitter legal battle on two continents with a flamboyant, high-flying Israeli software entrepreneur.

While the case involves such legal and technical esoterica as whether a certain software program was suited to production of shells of M&M candies but not the nougat centers of Mars Bars, the essence of the dispute is whether a software firm promised to develop software it knew it could not deliver.

According to documents from the federal court in New Haven, Conn., M&M/Mars, a Mars division, struck an agreement in May 1982 with an Israeli firm, Creative Output Ltd., to develop a Planned Order System, a software system for planning and executing customer orders for M&M/Mars products.

COL is run by Dr. Moshe Eliyahu Goldratt, an Israeli physicist, whose major claim to fame is an automated production process called Optimized Production Technology which, according to a recent article in *Fortune* magazine, he has pushed with messianic zeal and which has had great success in limited applications by a number of America's largest companies.

M&M/Mars had agreed in 1981 to license OPT for its nougat production through Creative Output, Inc., a Connecticut company

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Another setback for software vendors and users came with the third ruling in six months that software is subject to state sales taxes. **Page 8.**

■

It's a hell of a town, Shearson/American Express decided, so it's building its $170 million DP center in Manhattan instead of New Jersey. **Page 11.**

■

Pennsylvania is a hard state for hackers. Its computer crime law takes effect this week. **Page 13.**

■

Amdahl Corp. has brought out a performance accelerator for two of its mainframes that are compatible with the IBM 3083. **Page 67.**

■

There's no new 32-bit supermini in Hewlett-Packard Co.'s future, the company announced, but it is planning another personal computer this spring. **Page 81.**

■

FCC affirms delay of some access fees

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — It took the Federal Communications Commission less than five minutes last week to decide, finally, to defer the biggest part of its upcoming surcharge for access to the long-distance network.

Wednesday's abbreviated meeting followed one on Jan. 19 at which the commission tentatively decided to defer the residential and single-line business surcharges. Specifically, the commission decided last week that residential and single-line business customers of local telephone companies will not have to pay a monthly access charge of $2/line beginning April 3. Beginning on that date, however, multiline business users will have to pay a monthly charge of up to $6/line.

At last week's meeting, the FCC deferred final action on several access-related matters of special interest to business users — whether the fee will be imposed on each access line connecting a customer's premises with a Centrex central office system and whether some relief will be provided to Foreign Exchange users which, under tariffs recently filed by the regional telephone holding companies, would be hit with mammoth increases in their monthly rates. At a press conference following last week's meeting, Jack Smith, chief of the FCC's Common Carrier Bureau, said he expects the commission to issue a final order covering the Centrex-CO

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FYI

Accident modeler takes on the tough cases

By John Gallant
CW Staff

In 1980, goalie Jim Craig stood draped in an American flag before wildly cheering fans following the U.S. Olympic hockey team's victory over the Soviets in Lake Placid, N.Y.

In September 1982, Craig stood before the judge in a Massachusetts courtroom awaiting a verdict in a vehicular homicide case that stemmed from a May 29 automobile accident in which one woman was killed and two others injured.

Craig was acquitted, and much of the credit for that acquittal went to a soft-spoken computer expert whose testimony shed clear light on a trial that produced evidence as twisted as the two cars that collided on Rt. 6 in Mattapoisett, Mass., that long Memorial Day weekend.

As the Olympic hero breathed a sigh of relief, the expert — Dr. Yau Wu — chalked up another victory.

A former Boston University professor, Wu is no stranger to the courtroom. Using computerized accident reconstruction models he developed for the U.S. Department of Transportation, Wu has produced evidence for about 300 criminal and civil cases involving automobile accidents. He has been called to testify as an expert witness in more than 30 of those cases, almost all of which involved fatalities or severe injuries.

The president and sole employee of Dynamic Analysis Corp. in Concord, Mass., Wu has represented insurance companies, law firms, private citizens and most levels of the government in the legal arena. His rough, hand-drawn charts and graphs and the printouts from his Digital Equipment Corp. Decwriter are so convincing that the opposition usually decides to settle out of court rather than dispute Wu's version of events leading up to and following an accident.

In 1975, while Wu was teaching mechanical and aerospace engineering at Boston University, the U.S. Army asked him to develop a computer model that would predict the effect of a nuclear blast on Army vehicles, such as tanks and trucks.

On the basis of his success in that project, the DOT in 1976 gave Wu two years to upgrade the quality of its accident prediction model called Simulated Model of Automobile Collisions, developed by Calspan Technology Products, Inc.

"It took Calspan 10 years to develop Smac, but I didn't want to work with it. Mathematically, it was a very unstable model, and it was based on what I considered some very unsound assumptions," Wu explained in a recent interview in his Con-

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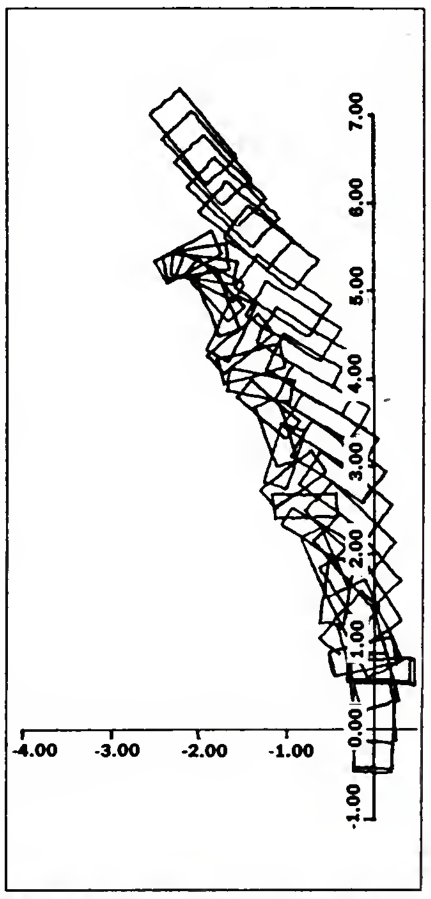

Vehicle trajectory after collision

NEWSPAPER

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and Foreign Exchange questions next month.

Besides deferring residential and single-line business surcharges, the FCC made some other changes in its access charge decision last week. For business users, the most significant one concerns a $25/mo termination surcharge on private lines that bypass the local exchange network. The commission said that users certifying that their private lines do not interconnect with a local exchange will not have to pay the surcharge.

Effect on business users?

A bigger question, however, is what effect the deferral of the residential/small business surcharge will have on rates for business communications services.

The FCC said it deferred the residential and single-line business surcharges so it can study a number of related issues, such as the impact of the surcharge on bypass services. At the press conference, Common Carrier Bureau Chief Smith said his office has evidence of "widespread bypass."

That evidence includes data showing what percentage of business users in several states have already bypassed their local telephone networks and the impact on the revenues of the affected companies. Smith said a report containing this data and extrapolating the effects of additional bypass will be issued shortly.

FCC officials freely admitted that a big reason for deferring the residential/single-line business surcharges was political. It was widely believed that the commission was trying to forestall legislation which would bar the surcharges after June 1985, the date by which the commission expects to complete its study and have new "tariff arrangements . . . put in place," according to a commission press release.

The effort to forestall legislation appeared to be successful.

Consideration of S. 1660

On Jan. 23, the Senate began considering S. 1660, a bill calling for a two-year deferral of the residential/single-line business surcharge. Authored largely by Sen. Bob Packwood (R-Ore.), a key Senate telecommunications policymaker, the bill is somewhat similar to H.R. 4102, the telecommunications legislation passed by the House of Representatives last year. The Senate bill is backed by state regulators, union and consumer groups but is opposed by business users, AT&T, the regional holding companies, the FCC and the Reagan administration.

As *Computerworld* went to press last week, the Senate was preparing to vote on a motion to table S. 1660.

According to a knowledgeable source, the motion will pass because "in an election year, no politician wants to deal with an issue that will alienate constituents or contributors. The FCC, by deferring the residential surcharge, has provided an acceptable way for senators to sidestep that choice."

Access surcharge

The access surcharge plan was unveiled by the Federal Communications Commission in December 1982. Its main purpose is to replace the existing system by which local telephone companies are reimbursed for providing access to the long-distance network.

Under that system, which has been made obsolete by the divestiture of AT&T and the growth of competition in the long-distance communications market, long-distance users pay local telephone companies for providing long-distance access. The user pays this fee initially to his long-distance carrier, who then passes it on to the local telephone company.

But the payment covers much more than the actual cost of providing access to the long-distance network. In other words, the local telephone company receives a hefty subsidy.

Under the FCC's access charge plan, much of the access cost and the related subsidy will be collected directly from local network users, rather than from long-distance users.

Since residential users fill a much larger percentage of the former group than the latter, Sen. Bob Packwood (R-Ore.) and others say the plan is pro-business and anti-consumer.

Effect of decision on future rates?

WASHINGTON, D.C. — What effect will last week's decision by the Federal Communications Commission have on the rates that business users will pay in the future?

AT&T and the nation's local telephone companies filed tariffs reflecting the FCC's access charge plan last October. AT&T proposed an overall 10.5% reduction in long-distance dial-up Message Toll Service (MTS) rates, a 6.9% reduction in Wats charges and a 15.3% increase in private-line fees.

Earlier this month, the company said that based on a re-evaluation of its costs, MTS and Wats rates would be reduced more than promised earlier, while private-line charges would not rise as much [CW, Jan. 16].

AT&T stressed on both occasions that all estimates assume that a $2/mo access surcharge would be imposed on residential and small business users. When the FCC decided to defer those fees, FCC Chairman Mark Fowler admitted that "not much" of the promised reduction might be left as a result.

Under the original FCC access charge plan, an estimated $3.5 billion in costs now paid by long-distance users would have been shifted to local network users. Since virtually all of this "revenue requirement" was to be subtracted from AT&T's costs, the savings presumably were included in the promised rate reductions. Deferral of the residential/small business access surcharge reportedly will reduce the cost transfer to about $1 billion.

Centrex-CO issue focuses on lines

WASHINGTON, D.C. — The argument over whether the access surcharge proposed by the Federal Communications Commission should be imposed on each access line connecting a customer's premise with a Centrex central office (CO) system results from the greater number of access lines needed to connect users of this equipment to their telephone end offices than is required for on-premise private branch exchanges (PBX).

The FCC has received complaints about the surcharge not only from Centrex-CO users, but also from the former Bell operating companies that supply this equipment. The operating companies say that because of the higher access charges, they will lose business to competing PBX suppliers and will have to raise their local exchange rates to compensate for the loss of revenue.

When the commission considered this same basic issue last year, it ruled that users of Centrex-COs installed or ordered prior to July 27, 1983 would pay the residential access charge — $2/line per month — while the other Centrex-CO users would have to pay $6. The users and regional telephone holding companies are now asking the FCC to apply the $2 charge to all users and/or adopt a "PBX equivalency ratio" that would charge each user for a lesser number of access lines than the user actually has.

The FCC rejected both options last summer. It claimed that "if Centrex uses more lines, then Centrex necessarily creates more line costs."

Arinc anticipates surcharge troubles

WASHINGTON, D.C. — There are two basic problems with the upcoming access surcharges on Foreign Exchange users, according to Aeronautical Radio, Inc. (Arinc), which operates communications facilities for the nation's major airlines and is a major Foreign Exchange user:

■ AT&T and, therefore, its customers will have to pay considerably more — 55% more — than other common carriers for local exchange access.

The justification for this differential is that the other common carriers will receive poorer quality access. But in the case of Foreign Exchange, Arinc said, the access provided to AT&T and the other common carriers is identical. As a result, the association has asked the Federal Communications Commission to make AT&T's Foreign Exchange access charge the same as the other common carriers' charge.

■ Last October, most local telephone operating companies filed tariffs specifying what they wanted to charge for interconnecting their networks with the long-distance circuits of AT&T, MCI Communications Corp. and the other interexchange carriers. Charges for Foreign Exchange interconnections were raised as much as 1,800%, according to Arinc General Counsel John Bartlett. The present charge, on the average, is $30/mo for each local phone number assigned to the "open end" of a Foreign Exchange line, he explained, adding that under the pending local carrier tariffs, this charge would be $390.

Federal plan could save $29.5 billion in DP waste

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — When it receives President Reagan's deficit-burdened federal budget this week, the U.S. Congress will also have before it a White House report recommending waste-reducing measures that in three years could save $424 billion, including $29.5 billion in DP and office automation expenses.

The recommendations are contained in a 656-page, two-volume study released in mid-January by the President's Private Sector Survey on Cost Control, better known as the Grace Commission after its chairman, J. Peter Grace, chief executive officer of W. R. Grace & Co. The DP/OA cost-cutting measures were prepared earlier by a special 44-member subcommittee of the Grace panel.

The subcommittee reported that "despite the fact that DP pervades the functioning of almost all aspects of the government, the estimate of federal DP expenditures is only $12 billion, about 1.6% of the total federal budget, but DP has the potential for savings far in excess of these annual expenditures."

A key finding of the DP/OA task force was that the government is not effectively managing its information technology resources. It recommended that the president appoint a federal information resource manager within a new White House Office of Federal Management.

The task force also said each agency should appoint a qualified top civil servant to oversee DP/OA within his agency who "should examine means of consolidating and enhancing the DP systems within the agency." This could lead to savings of $4.03 billion over the next three years. Noting that government teleprocessing costs are increasing by more than 25% a year, the panel said agency sharing of networks could save $517 million in three years.

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5. What you're probably left with is hand-drawn hierarchical charts—a long bus ride from structured programming techniques. And if you try to insert new code without understanding the logic, watch out. You'll probably introduce so many bugs you'll never be free of the exterminator!

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IBM 4300 rivals reach 95 in number

Despite seeming vigor, market may be on the wane

By Tom Henkel
CW Staff

The excitement had mounted to near-fever pitch five years ago as the computer industry awaited the introduction of IBM's E series processor. When it was finally announced as the 4300 series, the mid-range machine spawned a rash of both compatible and noncompatible processors that offered basically the same performance characteristics.

Today, there are at least 95 processors from more than 25 vendors pitted against the 4300 series. They range from low-end mainframes manufactured by such entrenched vendors as Burroughs Corp., Sperry Corp. and Honeywell, Inc. to high-end, 32-bit superminis made by Digital Equipment Corp., Prime Computer, Inc. and Data General Corp.

IBM's 4300 line alone contains 11 systems: the 4321, 4331-11, 4331-2, 4341-9, 4341-10, 4341-1, 4341-11, 4341-2, 4341-12, 4361 and 4381.

But the market for such systems may be on the wane, and most industry watchers think a shakeout is in the cards.

The transitory nature of computer markets is certainly not new. The rise and demise of the 16-bit minicomputer market is a classic example of how computer companies can be sent scavenging for market niches to sell their products. But in the case of 4300-class machines, the market was born, matured and now appears to be waning in less than five years — the same time frame many DP shops use to reevaluate their processing needs.

For users, a shakeout in the 4300 market could mean one of two things:

- The new processor purchased three or four years ago may have reached its limit when it comes to general business applications.
- Some vendors may wind up going out of business or dramatically changing their marketing focus for mid-range systems, perhaps switching from the general business arena to more specialized market niches.

Is the market for mid-range processors doomed? Most analysts agree the market will not simply vanish. It will, instead, change shape over the next few years, with most growth stemming from new applications of the machines.

Five years ago, when the 4300 was announced, the popular buzzword in the computer industry was "distributed data processing" (DDP), recalls Frank Gens, an industry watcher with The Yankee Group in Boston. Everyone was convinced that large corporations would distribute mid-range processors that would communicate with larger, centrally located mainframe processors.

The idea had merit, Gens said, but the unexpected happened. Microcomputers burst on the scene, sending a shock wave through the DP community that is still reverberating.

What once appeared to be a great idea — DDP — suddenly seemed less plausible. Mid-range processors require trained people to run them; in the case of large 4300 machines and their counterparts, Gens pointed out, up to a dozen highly paid computer technicians might be required at each remote location.

Micros, on the other hand, are "user-friendly," today's most popular buzzword. While they tend to offer less functionality than superminis or low-end mainframes, micros are cheap, easy to use and provide almost instant gratification to application-starved users.

But micros cannot bear all the blame for the fate of the mid-range processor market. To some degree, the sheep-like dependence on IBM by some computer vendors has lead them to the edge of a cliff.

"Typically, 'me too' products don't sell. Some firms have mistaken an [IBM] product upgrade for a whole new market," said Neil DiGeronimo, manager of high-technology research at the Cleveland-based market research firm Predicasts, Inc.

But DiGeronimo claimed there is still an ample supply of users for some mid-range processors. For example, the five big mainframers often referred to as "the Bunch companies" — Burroughs, Sperry, NCR Corp., Control Data Corp. and Honeywell — offer mid-range processors as a growth path for smaller system users. And superminis geared toward scientific applications, such as DEC's VAX-11 line, and processors manufactured by Harris Corp. and Gould, Inc.'s SEL Computer Systems Division have succeeded in identifying specialized applications like computer-aided design and manufacturing.

Ironically, the salvation of the mid-range processors may be the microcomputers that have displaced so many of them. The Yankee Group's Gens maintained that mid-range processors will make dandy intelligent controllers for networks of microcomputers. For that reason, The Yankee Group predicted minis will hold their own over the next four years, with about 30% of the total installed base of computer systems.

But Gens also noted the applications for those systems will change dramatically in that time.

Sampling of low-end mainframes in the 4300 performance range

Burroughs Corp.	B5900, B6900, A 9
Cambex Corp.	1636-1, 1636-10, 1641-1, 1641-11, 1651-1
Control Data Corp.	Cyber 170/815, Cyber 170/825, Cyber 170/835
Digital Equipment Corp.	Decsystem-10, Decsystem-20
Honeywell, Inc.	DPS 8/47, DPS 8/49, DPS 8/52, DPS 8/62, DPS 8/70
IBM	System/38 Model 4, System/38 Model 6, System/38 Model 8, 81300A, 8130B, 8140
IPL Systems, Inc.	4436, 4443, 4445, 4446, 4460, 4480
National Advanced Systems, Inc.	AS/6620, AS/6630, AS/6650
NCR Corp.	V-8565-IIE, V-8565-II, V-8595-II, V-8635, V-8645, V-8665
Nixdorf Computer Corp.	8890 Model 30, 8890 Model 50, 8890 Model 70
Sperry Corp.	System 80 Model 6, System 80 Model 8, 90/80 Model 3, 1100/61, 1100/71, 1100/81

Sampling of 32-bit superminis in the 4300 performance range

Apollo Computer, Inc.	DN 400, DN 420 (nodal processors)
BTI Computer Systems, Inc.	BTI 5000, BTI 8000
Charles River Data Systems, Inc.	Universe 68/05, Universe 68/37
Computer Designed Systems, Inc.	Advisor 32/60, Advisor 32/80
Data General Corp.	MV/4000, MV/8000 II, MV/10000
Digital Equipment Corp.	VAX-11/730, VAX-11/750, VAX-11/780
Formation, Inc.	F4000 Model 100, F4000 Model 200, F4000 Model 200AP, F4000 Model 300, F4000 Model 300 AP
Gould, Inc. SEL Computer Systems Division	Concept 32/8705, Concept 32/8750, Concept 32/8780
Harris Corp.	Harris 600, Harris 700, Harris 800, Harris 1000
Hewlett-Packard Co.	HP 3000 Model 39, HP 3000 Model 42, HP 3000 Model 48, HP 3000 Model 68
Honeywell, Inc.	DPS 6/35, DPS 6/92, DPS 6/96
Microdata Corp.	Sequel MS/3200
Perkin-Elmer Corp.	3205, 3210, 3230, 3250XP, 3200MPS
Prime Computer, Inc.	Series 50 2250, Series 50 250II, Series 50 550II, Series 50 750, Series 50 850
Stratus Computer, Inc.	Stratus/32
Wang Laboratories, Inc.	VS90, VS100

MODELER

from page 1

cord office. "I told the department that I wanted to develop my own model, and they laughed because I only had a two-year commission."

With a project team of four programmers, Wu built a complex mathematical model — dubbed Impact for Improved Mathematical Prediction of Automobile Collision and Trajectory — that proved to be an extremely accurate tool for predicting the extent of damage resulting from a two-car collision. DOT embraced the model, which was developed in Fortran on the department's Control Data Corp. mainframe in Rockville, Md., for automobile safety testing and safety design research.

When Wu tackles a case, he begins painstaking research into the details of an accident, poring over police reports, skid marks and crumpled vehicles to unearth the data that is fed into a model. Currently, Wu accesses a portion of the Impact model known as Impact Speed Estimator (ISE) stored on an IBM 370 mainframe at Boston University. While the entire Impact model is used to predict the outcome of a hypothetical collision, ISE aids Wu in reconstructing the events in an accident case.

The model, in return, yields such information as a vehicle's speed before impact, speed during braking and the angle of impact; this information usually points to the party at fault. If an accident involves more than two vehicles, Wu uses ISE to analyze the initial two-car collision and pieces together the rest of the puzzle with manual calculations. Thus far, his evidence has been accepted without reservation by the courts.

Wu, who says he is "well paid" for his efforts.

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Vista takes commute out of design firm's data

1ST USER

By John Gallant
CW Staff

ATLANTA — As if the task of inputting reams of numbers into a huge statistical model wasn't tedious enough, the employees of Dynaplan International Corp. faced another onerous chore — transporting that data some 35 miles by car each time the model had to be run.

After the 45-minute commute to United Information Services, Inc.'s (UIS) local service bureau here, one of Dynaplan's aircraft operation and air-control specialists would feed the data into a complex simulation model residing on the UIS mainframe.

But earlier this month, Dynaplan became the first user of UIS' Vista Service, which combines a Texas Instruments, Inc. microcomputer and UIS' communications and applications software. Since then, the consulting firm said, it has reaped time and money savings and gained access to a wealth of processing power.

Dynaplan is in the highly competitive field of airport design and airport terminal planning. In addition, the company does land-use modeling, financial feasibility analyses, heliport design and aircraft selection consulting for its clients.

Work Involves INM

Much of Dynaplan's design and consulting work involves using the Federal Aviation Administration's Integrated Noise Model (INM), a program that simulates the noise levels generated at and around an airport by different types of aircraft. A copy of the INM program and a set of statistical data bases related to it are maintained on UIS' Atlanta mainframe.

In order to input the variety of statistics needed to run the model, Dynaplan, in the past, had to transport data physically to the UIS office, where the data was entered via a terminal or with punched cards. That often led to costly data entry errors.

"We had to send someone who knew how to operate the computer and who was familiar with the model. Unfortunately, that type of individual is not the best data entry clerk nor the best proofreader," noted Dynaplan President Gordon Jackson. "We would have the wrong number input in the wrong column, for example, and that would kill an entire run. That was a real problem because the model is horribly expensive to operate."

UIS' Vista Service has alleviated that problem, Jackson explained. The Vista Service is based on a TI Professional Computer with 256K bytes of main memory, two 360K-byte floppy disks and TI's Model 850 printer. UIS' Vistacom communications software allows the Professional Computer in Jackson's office to upload and download data from the Atlanta office's 16M-byte Cray Research, Inc. Cray-1/S supercomputer.

While the communications software enables the Professional Computer to emulate an asynchronous, Ascii-compatible terminal for interactive processing, Dynaplan's Jackson prefers a more cost-effective method of utilizing the Cray supercomputer's enormous power. Statistical data for the INM model is entered into the TI micro, then printed, checked for errors and uploaded to the mainframe for processing. The model's results are then downloaded to the micro for review.

"The ability to communicate with the mainframe from our offices has resulted in a great time savings for us," Jackson said. "But a greater benefit has been the improved accuracy with which we can set up our data base on the Professional. We are keeping errors to a minimum, and that accuracy cuts down the number of repeated processing runs, which are becoming even more expensive as the model is updated."

The Vista Service has also given Dynaplan the opportunity to utilize a variety of software packages written for the TI micro's operating system, Microsoft, Inc.'s MS-DOS. Dynaplan is currently running Management Science America, Inc.'s Peachtext word processing and Peachcalc spreadsheet packages. Jackson has chosen to maintain the data from those applications on the micro rather than uploading it to the UIS mainframe.

Dynaplan has yet to make use of applications developed for Vista by UIS, including its Vistaform data entry system and Multiplan modeling package.

Jackson chose the Vista Service after an extensive review of the microcomputers and remote computing services available. A similar service offered by Control Data Corp. was the only real competition in the selection process, he said, but Vista's micro-to-mainframe link feature and a comprehensive installation plan swayed the decision in UIS' favor. Moreover, the Vistacom software gave Dynaplan's staff the capability to access aviation data bases offered by other remote computing services.

ASML: Translated it means quality systems.

A user's guide to systems development from Yourdon Press.

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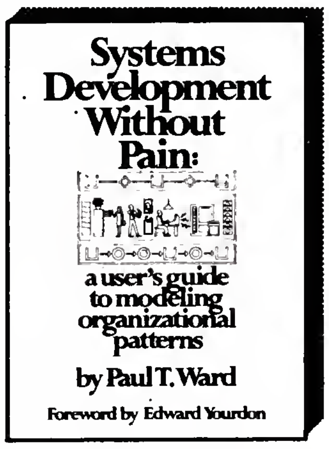
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Reformers argue '68 law leaves data vulnerable

By John Gallant
CW Staff

WASHINGTON, D.C. — Attempts to revise the 1968 federal wiretap law are raising questions about the confidentiality of data transmissions, which may be left unprotected by current legal safeguards.

A U.S. House of Representatives Judiciary subcommittee headed by Rep. Robert Kastenmeier (D-Wis.) began hearings last week to explore whether the 1968 wiretap statute should be rewritten to tighten what some telecommunications and civil liberties legal experts believe is a serious loophole. Other congressional panels, including a second House Judiciary subcommittee, this one headed by Rep. Don Edwards (D-Calif.), and a Senate Judiciary committee chaired by Sen. Charles Mathias Jr. (R-Md.), are also planning hearings on the topic.

The loophole, experts said, is that the 1968 law protects only aural (audible) telephone transmissions from unauthorized interception. The statute makes it a federal felony for a third party to tap into the conversations of others, with the exception of law enforcement officials who must first obtain a warrant for the wiretap.

The wording of the statute defines "intercept" as the "aural acquisition of information"; this leaves out digitized data transmissions because no "voice" sounds are generated.

Representatives on both sides of the issue admit that law enforcement authorities have not taken advantage of the loophole in criminal investigations, but revisionists are concerned that may change.

Because of the increasing importance of data communications, according to John Shattuck, director of the national office of the American Civil Liberties Union, the statute could give the federal government "greater search powers than it has ever had."

Shattuck believes "we need some sort of judicial warrant system. The law is clearly lagging behind our modern technology. This is a major concern for us and for many people in the communications industry."

A 1980 report drafted for the Senate by the U.S. General Accounting Office supports Shattuck's views. The study stated that "nonaural interception techniques" were being used more frequently and that data transmissions were "becoming less likely to be protected against unauthorized reception by current statutory provisions."

According to Kastenmeier, "the ability of new technology to go beyond such definitions and terms of invading personal privacy makes consideration of this issue most urgent."

Representatives on both sides of the issue admit that law enforcement authorities have not taken advantage of the loophole in criminal investigations.

U.S. Justice Department officials, however, are firmly opposed to any revisions to the 1968 wiretap law. Spokesman John Russell said the department is "comfortable" with the statute as it is written and added that it has "sufficient safeguards to protect individual rights."

Russell confirmed a recent statement by John Keeney, deputy attorney general in the criminal division, that the "current feeling [of the Justice Department] is that the 1968 wiretap law should not be changed. There would be simpler ways to take on computer crime," Keeney said.

When asked what those simpler methods are, Russell said that current federal wire fraud statutes provide sufficient protection against unauthorized data interception. Although federal law enforcement authorities are not required to obtain a warrant before tapping into data transmissions, it was the Justice Department's policy that "when in doubt, get a warrant," he maintained.

Panel chose not to include transmissions in statute

The U.S. Senate Judiciary Committee that drafted the 1968 wiretap statute made a conscious decision not to put data transmissions under the umbrella of protection afforded by that legislation, a key draftsman of the law said last week.

"The statute was only designed to deal with one problem — aural surveillance," G. Robert Blakey, former staff member of the Judiciary Committee, explained. "At that time, we had a consensus in Congress on the issue of wiretapping and bugging, and that was what we dealt with. We had no consensus on the interception of machine-based data or any other kind of surveillance."

Blakey, now a professor at Notre Dame Law School, thinks attempts by congressional panels and privacy groups to revise the 1968 statute may be misguided. "The loophole that they so solemnly announce simply does not exist. There is no loophole because the act was not intended to cover electronic data transmissions at all. That area brings up problems that are not at all related to wiretapping and bugging. We saw that as an issue to be taken up at a later point.

"Focusing on this 'loophole' is gimmickry," Blakey added. "It's a misfocused effort. People should really be talking about the privacy of computers against unauthorized access. They ought to address whether the current federal laws are adequate to deal with private or public access to machine-based data. That might help them to draft better legislation rather than simply revising the 1968 statute."

Protection of machine-based data, according to Blakey, was not a matter of public concern in the late 1960s.

"The problem today has nothing to do with the wiretap statute. Technological change is the problem. The rate of change has outstripped our legal system. That's a characteristic of a modern society."

In Blakey's view, there exists a body of federal statutes that is adequate to protect individuals and businesses from the unauthorized interception of data. He includes among those laws federal wire fraud statutes and the Civil Rights Act.

"There is no statute that deals specifically with the issue, but there is a group of federal laws that touch on it," he said.

Naisbitt to keynote users meet

RESTON, Va. — Software AG of North America, Inc. will hold its 13th Annual International Users Conference April 29 to May 3 in Anaheim, Calif. The keynote speaker will be John Naisbitt, chairman of the Naisbitt Group and author of *Megatrends: Ten New Directions Transforming Our Lives*.

Other speakers will include Thomas Blondi, Software AG vice-president of marketing, and Shaku Atre, president of Atre International, Inc.

In addition to general and technical sessions, the conference will feature education classes consisting of in-depth discussions between attendees and instructors. Classes will be offered on details of Software AG's Adabas, Natural and Complete products.

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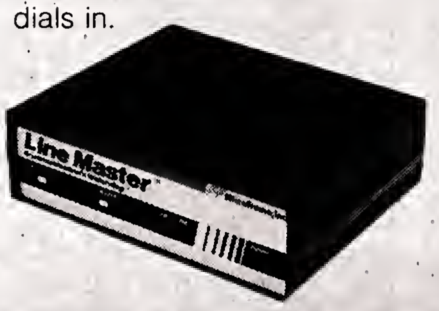


Panel on protecting data transmission urged

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — A special commission chartered by Congress may be needed to consider ways to protect communications privacy in the computer age, participants at House of Representatives hearings on the subject said last week.

"The essence of personal privacy protection is the assurance that private communications are protected," but in current congressional debate on computer security there is no common "moral or philosophical understanding" of how surveillance laws should protect competing interests in a technological era, Rep. Robert W. Kastenmeier (D-Wis.), chairman of the Judiciary Subcommittee on Courts, Civil Liberties and the Administration of Justice, said Tuesday.

The subcommittee is one of several in Congress concerned that existing laws, particularly the 1968 federal wiretap statute, do not adequately guard computer-based communications against electronic surveillance, from individuals and private and government organizations (see story on Page 6). While there is no widespread agreement that a new law is needed, there is general consensus that changing technology is raising new issues not covered under existing statutes.

Dr. Herman Schwartz, an American University Law professor, told Kastenmeier's subcommittee, "I have some difficulty understanding some of the current concern about loopholes" in the law. He argued that the wiretap law covers all verbal communications, whether analog or digital, and that all computer communications are protected under the Fourth Amendment, which provides protection from unreasonable searches and seizures.

Increased wiretapping

Schwartz, however, also said that "more people are being wiretapped today than ever before. . . . I think official electronic surveillance remains a distressing feature of modern America. Unfortunately, it will only get worse." He called interception of computer communications "a hard problem [which] should be faced directly as a special problem."

Other witnesses at the hearing said law enforcement abuses of wiretap law are to date minimal, particularly at the federal level, although there is more potential for abuse at the state level. It was also suggested that lack of manpower minimizes the amount of electronic surveillance conducted by state and local governments.

But privacy expert Dr. Willis H. Ware noted computers can be and are used to monitor digital communications, so lack of manpower will soon be no deterrent to widespread interception of computer communications. Ware, a member of the Corporate Research Staff of Rand Corp., said there is a need for a full understanding of the new technology, the problems it raises and their solutions.

Congress could rewrite the 1968 law or pass "a minimum patch . . . just to catch new technological developments," Ware said. But "my choice would be to do the whole job now, once and for all, and to get it off our minds. I do not see any risk attached to providing broad legal protection for any kind of information that is in transit on a communications channel, implemented in any technology and where the information can be represented in either analog or digital form."

Kastenmeier then proposed a "special, select commission to deal with the problems." Ware and Dr. Anthony G. Oettinger, chairman of Harvard University's Center for Information Policy Research, agreed a commission could be helpful. In particular, Oettinger said, it could develop an overall strategy for this issue, which could help individual congressional subcommittees in their deliberations on related issues.

In terms of protecting future modes of communications, however, Oettinger said "[protection] measures and countermeasures seem to keep pace with one another." He said we are entering an era when protection, particularly encryption, is available but will not be used because no one will take the initiative.

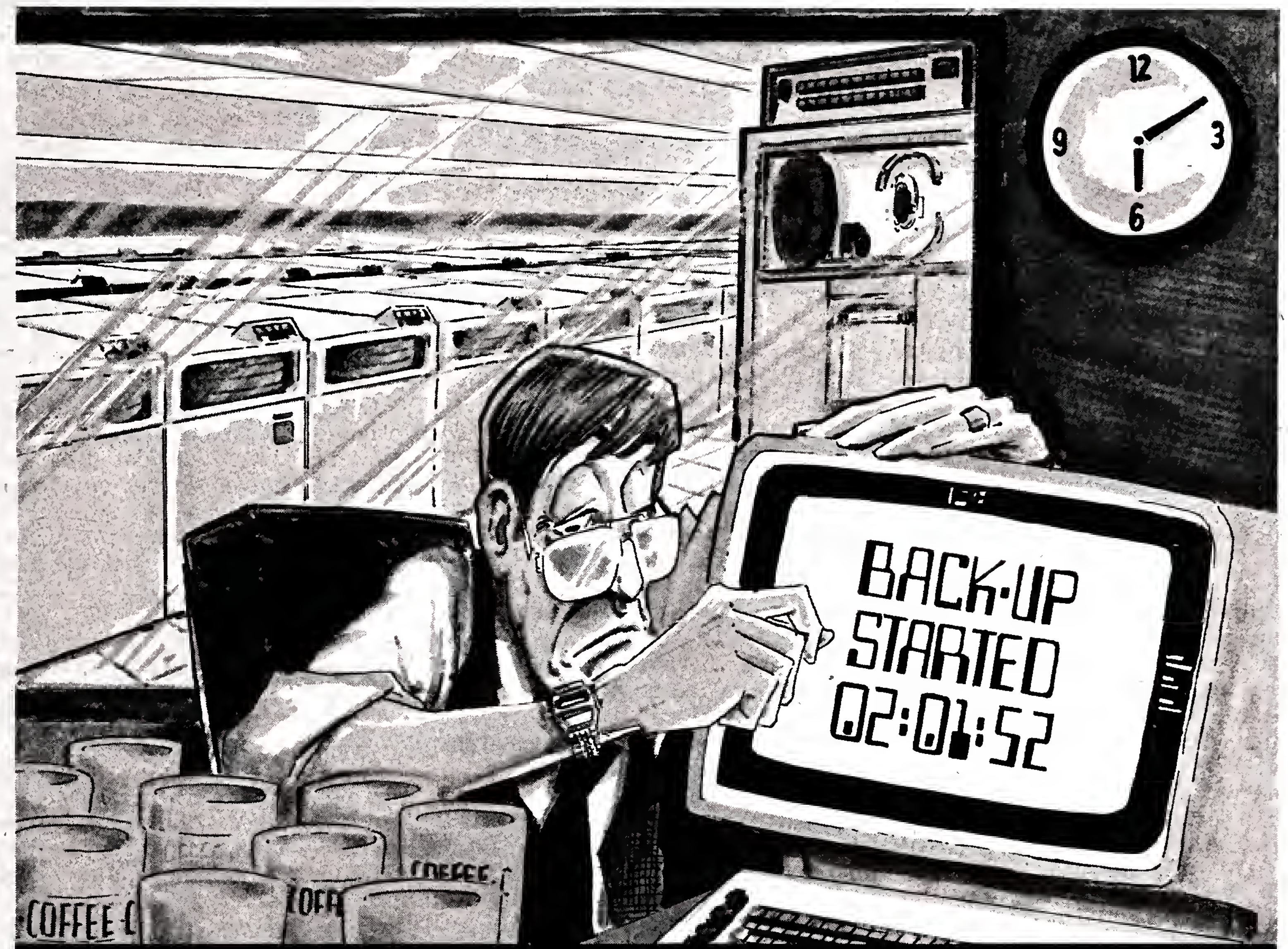
Before the breakup of AT&T, he added, the common carriers might have taken the responsibility to protect communications, but now the industry is too competitive for that, unless mandated by Congress.

Ware observed that it would be prohibitively expensive to retrofit existing communications channels to include adequate safeguards against interception.

But, he added, "the feasibility of gradually building in protection is there."

Kastenmeier said his main concern is for private citizens.

Ware agreed that "the computer people [can], if push comes to shove, take care of themselves. . . . It's the private citizen who is at risk" from electronic surveillance.



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S.C. high court rules software tangible, taxable

By Bill Laberis
CW Staff

COLUMBIA, S.C. — For the third time in six months, a state high court has dealt a setback to software vendors and users, ruling that software is tangible personal property and, therefore, subject to state sales taxes.

In the latest ruling, handed down Jan. 10 by the Supreme Court of South Carolina, the DP department within a bank here lost its bid to overturn a lower court decision sustaining the bank's $2,376 sales tax payment for a personnel package bought in 1979. Citizens and Southern Systems, Inc. (CSS) had argued that it purchased knowledge and services — not tangible property — from Information Science, Inc. when it paid $59,000 for the personnel package. CSS is a subsidiary of Citizens and Southern National Bank here.

The high court ruled that the magnetic tape on which the program was delivered was "in a form which could be seen, weighed, measured, felt and touched and was, therefore, tangible personal property."

However, the court also said that had the program been delivered via phone lines or had a programmer or keypunch operator keyed in the code, the final product would not have been subject to the tax.

J. Christopher Henderson, legal counsel for CSS, said no appeal of the state ruling to the federal courts would be forthcoming. "The case as decided is wrong, I believe . . . but there are no grounds to bring this case to the federal level," he said in an interview last week.

The sales tax issue has gained prominence since last August, when high courts in both Vermont and Maryland issued definitive rulings on the application of sales taxes to software [CW, Aug. 22]. In both cases, the courts ruled against users who had contested their payment of sales taxes on mainframe software programs.

A month later, the high court in Michigan reversed a lower court ruling and upheld a user's claim that sales taxes should not be applied to custom mainframe software [CW, Sept. 26].

According to one legal specialist, the South Carolina ruling is indicative of a trend to tax software — all software — as a means of plumping state coffers. At present, more than a dozen states have tax codes that differentiate between custom and prewritten software, applying sales taxes only to the latter. But, the specialist said, users should beware that the definition of custom software can vary greatly from state to state.

"The fact that the price of a software package includes some service or maintenance, or just because it is a mainframe package that costs a lot, does not necessarily mean it's custom software," said L.J. Kutten, an attorney and author of *The Computer Buyer's Protection Guide*. "There are states where the definition of custom means the package was created specifically for one user."

Kutten said that court rulings from states like South Carolina and Vermont, which differentiate between programs delivered via tape and those delivered via telecommunications links, could promote more aggressive teledistribution of software.

Ronald Palenski, assistant general counsel for the Association of Data Processing Service Organizations, Inc., said he had hoped the more favorable Michigan decision would serve as a precedent for states grappling with the application of sales tax codes. The high court in South Carolina, he said, "took a somewhat simplified view of the matter, especially when you consider the state won't tax software delivered" by telephone but will if it comes on tape.

Link ties micro, DBMS

By Paul Gillin
CW Staff

MONTREAL — Micro Tempus, Inc., maker of the Tempus-Link micro-to-mainframe communications software, last week added a link between the IBM Personal Computer and most popular data base management systems (DBMS) and file structures.

Called Tempus-Data, the new software is said to allow users to retrieve selectively and reformat data from Vsam, Qsam, Isam and Bdam file structures for loading directly into microcomputer packages using Software Arts, Inc.'s Data Interchange Format (DIF). The vendor will also provide optional hooks into IBM's IMS/DL/1; Cullinet Software, Inc.'s IDMS; Intel Corp.'s System 2000; Cincom Systems, Inc.'s Total; Software AG of North America, Inc.'s Adabas; and Computer Corp. of America's Model 204 DBMS.

Tempus-Data relies on "virtual diskettes" that reside as Vsam files on the mainframe, according to Yvon Leveille, president of Micro Tempus. Each "diskette box" can contain up to 256 virtual diskettes, each having a storage capacity of 32K bytes to 15M bytes.

A Tempus-Data user can select information to the record and field level from the mainframe data base and extract it into new files on virtual diskettes. The extracted data can be rearranged in any order, the format and length of numeric fields can be modified and new fields may be created. Before reloading, a variety of optional operations can be performed on the extracted data.

Extracted data is loaded into the virtual diskettes in DIF format and can be copied or downloaded directly into the micro application. A list of 12 commands is used to perform all extracts and downloads, Leveille said. Tempus-Data is independent of communications methods. The product can be used with asynchronous and coaxial communications as well as with IBM 3274 and 3276 communications controllers and board-level coprocessors.

Tempus-Data, which requires Tempus-Link, was developed by Oceanic Information Systems, Inc. of Montreal. It is sold on a maximum concurrent user basis. This refers to the maximum number of users who can access the program at one time and is not related to the total number of Personal Computer users who have access to Tempus-Data.

The single-maximum concurrent user purchase price for Tempus-Data is $650 with volume discounts available. Access to Vsam, Isam, Qsam and Bdam file structures is standard with an additional 20% charge levied for access to each DBMS. The single-maximum concurrent user price for Tempus-Link is $995 with volume discounts available.

Micro Tempus is located at Suite 300, 440 Dorchester Blvd. W., Montreal, Quebec, Canada H2Z 1V7.

Tech acronym dictionary out

DETROIT — Gale Research Co. has published the "Dictionary of New Information Technology Acronyms," which defines more than 10,000 acronyms and abbreviations used in telecommunications, videotex, word processing, data processing and office automation.

Hardware, software, organizations and companies are included in the guide.

The manual is priced at $300 and is available from Gale Research, Book Tower, Detroit, Mich. 48226.

MARS from page 1

that markets the product and is owned by Goldratt and his brother, Israel Pazgal, through a Dutch intermediary firm.

This agreement has also dissolved into a separate lawsuit in which M&M/Mars seeks $292,389.74 from COI for allegedly fraudulently assuring M&M/Mars that OPT, suited to "job shop" production like that of creating the sugar shell surrounding M&Ms — in which it proved extremely successful — would work on the "continuous flow" production of nougat, at which, M&M/Mars said, it was a dismal failure.

Denying the M&M/Mars allegations of nougat fraud, Robert Morris, an attorney for COI, noted the success of the system for M&M candy production and implied M&M/Mars has already received a greater than anticipated benefit from OPT. Lanny Davis, a Washington, D.C., attorney who specializes in computer law and is representing M&M/Mars, characterized Morris' comments as an interesting defense that has no basis in law.

In the Planned Order System case, M&M/Mars is seeking $998,623.14 which, it claimed, it lost in monies paid to COL and COI for the Planned Order System and in expenses for computer hardware supposedly necessary to implement the system which, M&M/Mars said, was never delivered, even after COL/COI was given several months of extra time. COL, for its part, has sued for payments due, breach of contract and damages to the tune of $17 million in a Tel Aviv court.

COI, in turn, claimed it had nothing to do with the Planned Order System and wants the money it said M&M/Mars owes for using OPT — more than $100,000 — and $1.5 million in damages. All sides are waiting for the New Haven court to rule on motions setting jurisdiction in the Planned Order System dispute and an attempt by M&M/Mars to attach COI assets so they cannot be transferred out of the country to the Israeli firm COL.

While the case is no doubt of interest to the candy industry, it has astounded the business world since Mars, a privately held McLean, Va.-based firm, is notoriously publicity shy and almost never pursues litigation. Industry observers can only guess at its annual revenues — perhaps in the neighborhood of $4 billion — and cannot remember the last time Mars representatives even spoke to the press.

Now Mars is talking to anyone who will listen. The reason, according to company spokesmen, is that the firm is "mad as hell," believing it was bamboozled by what one company representative called a "whiz kid software developer who promised the moon to get customers on the hook," only to ask for more time and money without ever delivering a usable product.

Should have known better

"This is happening all over the industry," a spokesman said, admitting that Mars, a huge multinational organization, perhaps should have known better. But, he added, "even the sophisticated [DP users] are mesmerized by whiz kids," although "very few have the resources or are willing to blow the whistle."

COL strongly denies the charges and insists it was right on target with the Planned Order System development. "We were most of the way toward solving the [Planned Order System] problems," Ira Grudberg, a New Haven attorney representing COL, claimed. Further, he said, the agreement was for a joint software development project involving personnel from both M&M/Mars and COL, who were acting as consultants, and was not a contract to deliver any specific product.

Grudberg added that M&M/Mars "contributed to the delay by changing specs . . . and in not getting a certain computer" necessary for the system.

Any precedent the case might set for the alleged promises of software developers could have a deep impact on the DP industry, but possibly the item of greatest interest to the industry is the motion by M&M/Mars that the OPT source code be examined by a court-appointed expert to determine if it could possibly have had any utility for nougat production. This is a motion the defendants understandably oppose vigorously.

This motion, with its potentially great repercussions for software developers, who guard nothing more zealously than the source code of their products, is now before court.

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*Frank L. Chisholm is Cullinet's Executive Vice President. Frank has worked closely with Cullinet users and prospective users for more than six years. As a key member of Cullinet's management team, Frank has contributed heavily to Cullinet's database product development strategy.

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College's computer pact under investigation

By James Connolly
CW Staff

DETROIT — A controversial computer pact was one of several contracts under scrutiny when the Michigan Department of Education recently sent an investigative team to Wayne County Community College here.

The contracts being examined at the 14-year-old school, which is suffering from declining enrollments and administrative turmoil, include one in which the college has paid more than $8 million since 1978 to Systems and Computer Technology Corp. (SCT) of Malvern, Pa., to upgrade and manage the college computer system. According to reports in *The Detroit News*, the college is committed to paying SCT another $3.8 million before SCT leaves in 1986. However, SCT spokesmen said the firm will collect no more than $1.2 million under the current extension.

The Detroit News also published reports in which school officials and consultants charged that SCT provided outdated software, assigned inexperienced employees to the college and repeatedly missed deadlines. But SCT officials and school officials who have dealt with the firm argued that the news reports were "biased" against SCT and that the Pennsylvania firm did the best job possible in an environment in which there were three college presidents in less than two years.

"I think we have done a fantastic job," SCT President Fred Gross said. "The point is that when we started work, there was practically zero computer support at the school."

The probe, ordered by the state legislature late last year, is headed by Phillip E. Runkel, state school superintendent, and will target various construction and service contracts. Runkel said of the SCT contract,"It is just too costly and a drain on needed funds from educational programs."

Runkel is investigating whether the 1978 award to SCT — contracted for $3.3 million — and subsequent contract extensions may have violated the state's competitive bidding policy. "If you haven't looked at the competition, you don't know what's available," he said.

SCT was hired in 1978 to develop a five-year plan for computer upgrading and rehired to manage the computer department, develop software programs and make recommendations for the purchase of a mainframe. That mainframe is a Honeywell, Inc. DPS-2, which the college uses for administrative purposes and as a host for various IBM minis used for computer training on the five college campuses.

The contract was most recently extended last October although, Gross said, SCT wanted to phase out the contract because of the "political environment" at the school.

Gross, who maintained that the SCT pact was exempt from any competitive bid regulations because it involved professional services provided by the sole qualified supplier, said he would give Runkel his "full support and cooperation." He said SCT has been a leading supplier of computer services to colleges for 16 years.

Meanwhile, Steven Racine, former director of budget and management for the college, said, "The taxpayers got cheated, but it wasn't SCT who cheated them. It was the management of the college and the trustees who failed to put pressure on their own people to be cost-effective."

Racine said the college administrations "wanted to go from nothing to state of the art in no time" and blamed missed deadlines on new administrations constantly changing priorities.

He also said the charges against SCT were undocumented and made by disgruntled or fired college officials who wanted to sabotage the computer program.

Meet to cover DP performance

PHOENIX — A four-day conference on "EDP Performance Management" is scheduled March 5-8 in the Holidome at the Metrocenter here.

Sponsored by Applied Computer Research, Inc. (ACR), publisher of *EDP Performance Review* and *EDP Performance Management*, the conference will explore management issues involved in improving data center performance and user service.

A preconference seminar, "Keeping the User Primary," will examine how users approach automation, how to achieve user consensus and how to recognize unstated goals of a user.

The cost of both the conference and preconference seminar is $525 to subscribers of *EDP Performance Review* or *EDP Performance Management* and $600 to nonsubscribers. The conference alone costs $450 to subscribers and $525 to nonsubscribers. ACR can be reached through P.O. Box 9280, Phoenix, Ariz. 85068.

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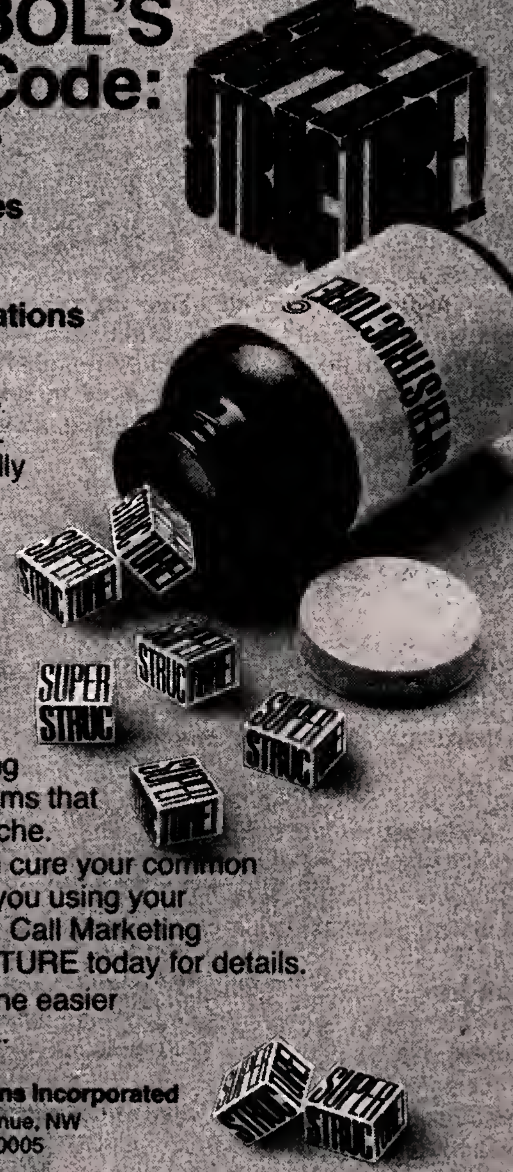

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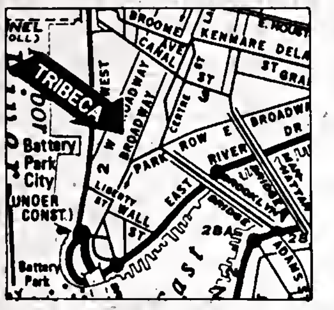
Shearson to build DP center in Manhattan

By David Myers
CW New York Bureau

NEW YORK — Lured by tax abatements and a promise of lower electrical costs, Shearson/American Express, Inc. has agreed to build its $170 million data processing center along with an office tower in lower Manhattan rather than in New Jersey.



Sale of the city-owned, 172,000-square-foot site in the Tribeca neighborhood six blocks north of the World Trade Center for $23.9 million must still be approved by the city Board of Estimates and the New York state legislature.

However, in announcing the letter of intent signed by both Shearson and the city, Mayor Edward I. Koch said he anticipated "no problem in getting either the city or the state to pass on the deal."

Shearson would move its $100 million worth of IBM computer equipment into the 10-story structure in early 1986, according to Richard F. Morrison, executive vice-president and director of information services for the financial concern. Shearson's computer resources are now scattered over five different locations, and the lower Manhattan computer center "will allow us to tie them back together into one organization again," Morrison said.

Morrison described the new complex, on which construction is scheduled to begin in August, as the hub of Shearson's worldwide financial processing operations.

While city officials crowed over a victory in their bidding war against Jersey City, where Shearson had originally planned to build the complex, Morrison said the most important reason behind Shearson's decision to choose a city location was that the Tribeca site will enable the company to build a data processing center without buildings on either side of it.

"It's a security issue," Morrison said. "We wanted to build a stand-alone facility so that we can control access to it. In the financial community, the whole world revolves around data processing. We had to be sure we could secure the facility."

The computer building, designed by New York architectural firm Skidmore, Owens and Merrill, will also give Shearson the freedom to expand its data processing facilities as needed, Morrison said. "It's designed in such a way that if we outgrow any of the data centers, we can move the communications facilities out," he explained.

The data complex will also house Shearson's purchasing and printing operations as well as its communications equipment, according to Morrison.

In a deal hammered out with Deputy Mayor Ken Lipper, Shearson was offered a two-year, tax-free construction period to keep its computer works in New York. In the third year Shearson will receive a 100% abatement from its assessed property taxes, according to the terms of the deal worked out with the city fathers.

After that the abatement will shrink by 20% a year for four years. Eight years after ground is broken on the complex, Shearson must begin to repay the abated taxes at 10% a year.

The financial services company will have repaid the city within 17 years after the start of construction.

But in addition to the tax incentives, Shearson was also offered a low-cost power deal. In a tentative agreement worked out with John S. Dyson, chairman of the New York Power Authority, the state will provide hydroelectric power to the complex, skirting the local power company, Consolidated Edison.

Morrison told *Computerworld* that Shearson also plans to bypass New York New England Telephone Co. (Nynex).

Shearson is the latest organization to announce its intention to bypass Nynex, following on the heels of The Port Authority of New York and New Jersey, which has set up its own private branch exchange at the Port Authority Bus Terminal here [CW, Jan. 16].

Directory lists 16,000 N.Y. Users

NEW YORK — A directory listing 16,000 computer users in the New York metropolitan area has been published by Computer Management Research, Inc.

The directory includes profiles of hardware, software, languages, data bases, consultants used, future plans, applications and DP executives' names, titles and telephone numbers.

The directory sells for $295 and is available from Computer Management Research, 20 Waterside Plaza, New York, N.Y. 10010.

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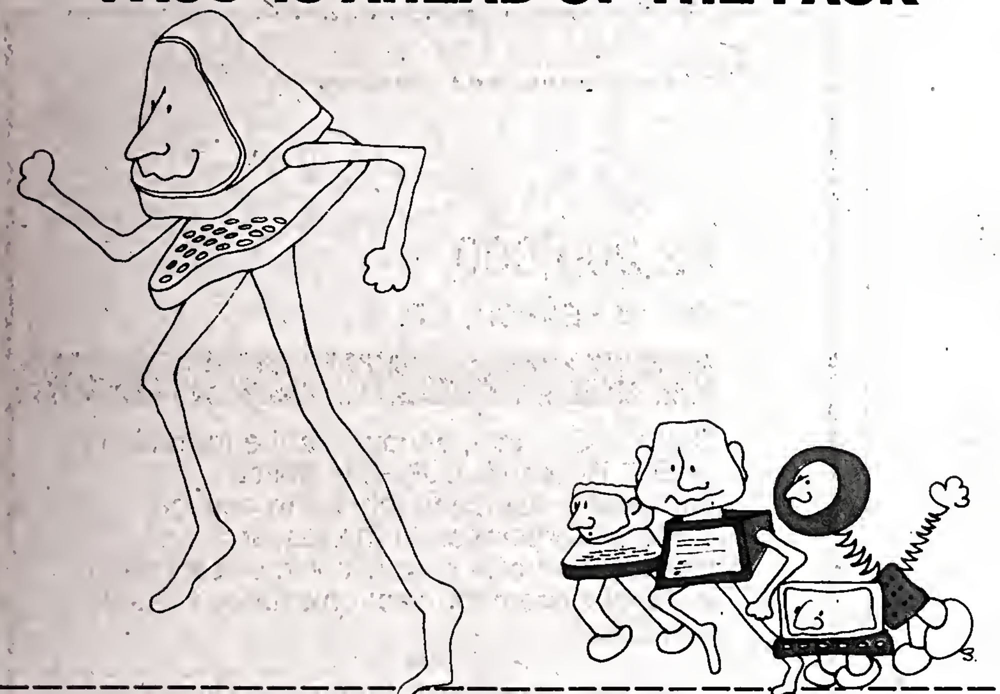

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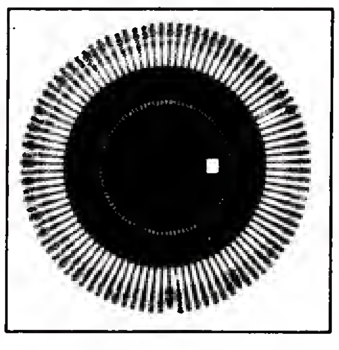

Dataproducts Daisywheel Printers

Customs seizes VAX cargo as contraband

By James Connolly
CW Staff

A shipment of computer equipment allegedly once bound for the Soviet Union has been impounded by U.S. Customs officials pending a possible criminal prosecution.

The three cargo containers were confiscated on arrival Jan. 14 at Andrews Air Force Base near Washington, D.C., after the equipment's manufacturer, Digital Equipment Corp., agreed to purchase the contents from the government of Sweden. The contents are said to include a sophisticated VAX-11/782 supermini computer.

The twisting trail of international intrigue and delicate negotiations broke into the open in November when Swedish Customs and West German officials confiscated a total of 15 containers of DEC equipment. According to earlier reports [CW, Nov. 21, Nov. 28, Jan. 9], the equipment had been purchased from DEC by an as yet unnamed New York export firm which had obtained an export license to ship the sophisticated system to a South African firm.

The equipment, according to U.S. officials, was never unloaded in South Africa; instead, it was diverted to West Germany and Sweden, bound ultimately for the Soviet Union.

The South African firm was later found to be controlled by Richard Mueller, reputedly an agent for the KGB, the Soviet secret police and intelligence agency. Mueller, a native West German, has been banned by the U.S. Commerce Department from trading with U.S. companies. He remains a fugitive from a 1979 federal indictment charging him with violating export regulations in a separate case.

"The equipment is back in the U.S. [DEC] purchased the computer, but U.S. Customs seized it as contraband because there is fraud involved," said Charles Powers, spokesman for the U.S. Treasury Department.

That fraud, according to Powers, involved the attempt to divert the equipment to the Soviet Union. U.S. defense officials have said a VAX-11 could help the Soviets with computer-aided design and manufacture of sophisticated weapons.

No information from DEC

DEC spokesman Joseph Nahil said he had no information about DEC trying to reclaim the equipment. "It is nothing that we have discussed," he stated.

DEC reportedly shipped the equipment from Sweden to the air base in cooperation with U.S. Customs authorities, knowing that the materials would be confiscated. Nahil declined to reveal what his company is paying for the equipment; a spokesman for the Swedish Embassy in Washington, D.C., said only that the sale is based on "customs value."

Sweden offered to sell the equipment back to DEC after nobody claimed it in the wake of the November seizure. Swedish law requires the government to offer the original manufacturer first option to buy materials that the neutral country classifies as "war materials."

West German officials earlier returned to U.S. custody a VAX-11/782 dual processor and other equipment seized from the Swedish ship *Elgaren* shortly before the vessel left the port of Hamburg, West Germany. That ship, one week later, docked in Sweden with additional containers that are believed to be part of the same consignment. An inventory of the equipment seized in both countries has not yet been made public, and the Swedes have classified their inventory top secret.

The West Germans made the seizure after U.S. Customs officials relayed a tip that the equipment was being diverted to the Soviet Union from its listed destination in South Africa.

Powers said the original exportation was a fraud because there never was an intent to send the material to South Africa. In New York, a federal prosecutor declined comment on whether any evidence of criminal wrongdoing has been presented to a grand jury.

However, customs officials reported that they eventually will move the equipment from the Washington-area warehouse where it is now to New York "for use as evidence in the trial."

"If after the trial it is forfeited, it becomes property of the U.S. government and is up for grabs among various agencies," customs spokeswoman Christine Frazer said.

When asked whether DEC stands to lose money if it cannot recover the equipment, Nahil said, "I don't think it comes down to a question of finances. I think the real issue is trying to be responsible and responsive in this kind of international matter."

Swedish authorities said the shipment would have passed undetected to the Soviet Union but for a customs policy of inspecting all shipments from South Africa.

IEEE changes Infocom site

SAN FRANCISCO — The site for the Infocom '84 Conference, set for April 9-12 by the Institute of Electrical and Electronic Engineers, Inc. (IEEE), has been moved to the Hotel Meridien at 50 3rd St. in San Francisco.

The original conference hotel was damaged by fire, necessitating the move.

Further information can be obtained from Steven H. Richman, AT&T Bell Laboratories, Room HO-3L-531, Holmdelm, N.J. 07733.

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Pa. law to provide stiff penalties for hackers

By John Gallant
CW Staff

HARRISBURG, Pa. — February will usher in a colder climate for this state's computer criminals.

Calling it a "modern tool to combat modern crime," Gov. Richard Thornburgh last month signed into law a bill that provides stiff penalties for hackers and other high-technology bandits. Effective Feb. 2, the law calls for two levels of criminal penalties for those convicted of engaging in illegal computer activities.

The statute, sponsored by state Rep. Samuel Rappaport (D-Philadelphia), puts Pennsylvania among the minority of states that have some type of computer crime legislation. The other 16 that have done so are Alaska, Arizona, California, Colorado, Florida, Georgia, Illinois, Michigan, Minnesota, Missouri, Montana, New Mexico, North Carolina, Rhode Island, South Dakota and Utah.

One section of the Pennsylvania law makes "gaining access to, altering, damaging or destroying any computer, computer system, software, program or data base with criminal intent to interrupt the functioning of any organization, to defraud or to steal services or property" a third-degree felony, punishable by a maximum fine of $15,000 and up to seven years in prison, according to Terry Williamson, deputy press secretary for Gov. Thornburgh.

The law's second section makes the same computer misuse a first-degree misdemeanor if the individual convicted is not utilizing the technology to commit a more serious crime, such as embezzlement. Williamson said the second section is specifically targeted toward hackers and provides for "some very tough misdemeanor-level penalties," including a maximum fine of $10,000 and a prison sentence of up to five years.

'Strong message'

At the December bill-signing ceremony here, attended by state Attorney General LeRoy S. Zimmerman and supporters of the measure, Thornburgh said, "This legislation will send a strong message to those who would use the computer to engage in illegal activities — whether their nature be devious or frivolous — that Pennsylvania is committed to ensuring that an instrument crucial to our modern economy is not used to threaten individual privacy and undermine commercial activity. Those who exploit this technological resource for criminal purposes should know they will be prosecuted to the fullest extent of the law."

The bill faced little opposition in the state legislature, according to Bridget Whitley, chief counsel to the House Judiciary Committee chaired by Rappaport. It was backed by the state's business leaders and law enforcement agencies, including the Philadelphia district attorney's office and the Pennsylvania Crime Commission, a clearinghouse for information on organized crime.

Whitley said the most difficult task was drafting legislation that will remain useful as technology and computer crime evolve over time. "We tried very hard to make this a state-of-the-art bill so it wouldn't have to be revised in the future. It was really a challenge to draft something that will have to deal with this technology five or 10 years from now.

"We even included concepts like the organic transfer of data, on the advice of a computer consultant who told us that biological technology will be feasible soon," Whitley maintained.

Prior to passage of the Pennsylvania law, which Williamson called "one of the toughest" in the nation, no specific anticomputer crime statutes were available to state prosecutors. Illegal computer activity could only be dealt with through broader "theft-of-services" legislation, according to deputy press secretary Williamson.

CORRECTIONS

Wayne Smith, author of "Just what is quality, anyway?" [CW, Jan. 16], was identified as president, specializing in quality, at Applied Information Development, Inc. in Oak Brook, Ill. He is vice-president, quality, at that company.

The correct title of the conference being held this week in Washington, D.C., by the Professional Exposition Management Co. ["Calendar," CW, Jan. 9] is "Uniforum." The conference sponsor can be reached at Suite 205, 2400 E. Devon Ave., Des Plaines, Ill. 60018.

" 'PC Connection' Ties DG's Iris to IBM Micro" [CW, Dec. 5] incorrectly identified the Iris operating system as a product of Data General Corp. Iris is a product of Point 4 Data Corp. and runs on Point 4's Mark series of multiuser systems, DG Nova computers and other Nova-class minis.

In the Office Ware column of Dec. 5, an announcement of Keepit, a series of programs from Martin Marietta Data Systems, Inc. for the IBM Personal Computer, carried an incorrect price. The correct price for the program series is $450.

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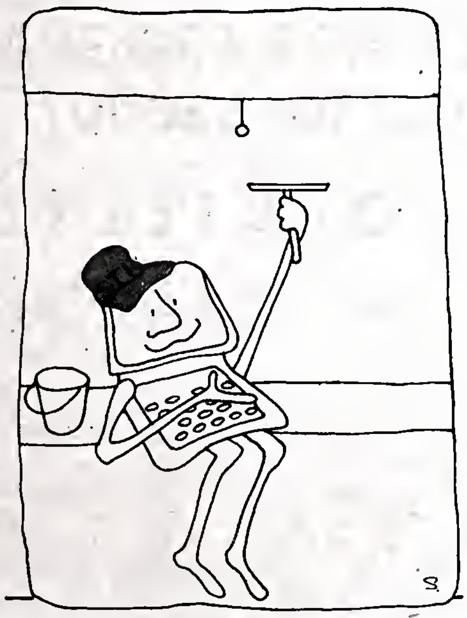

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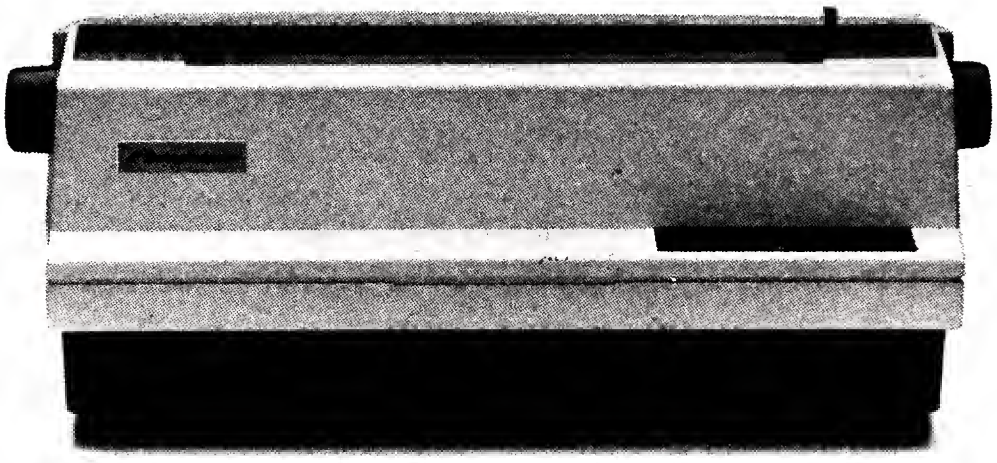

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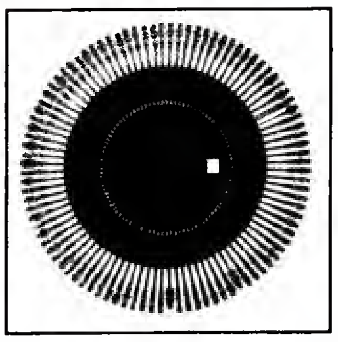

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DP security on the rise

Expert attributes it to world tension

By Robert Batt
CW West Coast Bureau

LOS ANGELES — Heightened world tension and the much-publicized increase in security measures in the nation's capital are having a ripple effect among computer users and manufacturers, according to a security expert.

Bill Stark, president of Stanley/Wacker, Inc. and a director of the International Association of Professional Security Consultants, said that in the last six months there has been a huge increase in demand for computer security advice.

"The wave of terrorism around the world has started something close to paranoia in the computer industry. This is good because, in the past, computer users have not been sufficiently aware of the dangers of inadequate protection, both for their own companies and for the national interest," Stark asserted in an interview here following a recent meeting of the association.

The security consultant, who recently testified before the U.S. House of Representatives Subcommittee on General Oversight and the Economy, said awareness of and responsibility for computer security measures must start with top-level management if security concerns are to filter down throughout the rest of an organization.

Bill Stark

"The computer security director must be put on a senior executive level within a company and must be a person who has a background in all areas of security rather than simply being an ex-law-enforcement agent," Stark added. The major vulnerability for most computer users, he asserted, lies with internal personnel. "You would be amazed at how easily people give away information to someone who shouldn't have it. Because of complacency and out of a desire to facilitate information flow within an organization, people get cleared with information they really shouldn't have, and that is where the security breaks down."

In an attempt to reduce computer security breaches, Stark's company, based in Tampa Bay, Fla., is providing a service to computer users and vendors called covert vulnerability assessment. Using information available to a would-be assailant, the consultants carry out a fake attack on a client company's security procedures; knowledge of the attack is confined to senior management. The goal is to steal information without anyone else knowing that a security breach has occurred.

Security risks outlined

In assessing the security procedures of one of its clients, an electronic toy manufacturer, Stanley/Wacker, Inc., made a detailed checklist of the security risks involved and recommended security improvements where needed. Two areas in particular, the marketing function and manufacturing facilities, received close scrutiny.

Among the security enhancements recommended in the marketing area were:

■ A thorough screening of all personnel — from secretaries to vice-presidents — involved with any aspect of major product developments.

■ A review of personal computer use, including methods for encoding software, logging on procedures and the use of passwords. The security consultant suggested the installation of telephone modem interfaces, which require users to enter passwords when logging on to a system; the use of an incorrect password automatically blocks that user from entering into the system.

■ Improved security procedures for the storing of disks and computer printouts. Stanley/Wacker helped its client put together a program under which it can classify information along U.S. Department of Defense lines — confidential, secret and top secret — and then restrict access according to those classifications.

■ More controlled access to copying facilities in classified areas of a company. "The aim is to make copy machines off limits to people who are not supposed to have access to the information. Printouts should also not be copied, except by approved personnel," Bill Stark, president of Stanley/Wacker, noted.

In the manufacturing area, security recommendations included:

■ Multiple sourcing of key materials. If a company purchases from only one or two suppliers, a competitor can often accurately assess the company's projected output, Stark explained.

"We sometimes recommend underbuying or overbuying and then readjusting in order to keep competitors off track."

■ A review of physical security in manufacturing areas so that top-secret material is not easily seen.

■ Screening of personnel involved in strategic company projects. In particular, the toy manufacturer was warned to beware of white-collar employees who regularly change jobs within the company, thereby gaining access to a wide range of information that could be useful if they set up in businesses of their own or go to work for a competitor.

■ The securing of meeting rooms prior to vital discussions in order to deter activities such as bugging. In particular, the consultant stressed, it is important to protect pricing information from getting into the wrong hands.

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A conversation with IBM's DeMaio

Commonsense approach to DP security

In any ranking of today's "hot" issues, computer system security is certainly one of the hottest. Events in 1983 — the year of War Games *and the hacker — served to point up just how vulnerable modern technology is to misuse and abuse, both from within and without. As director of data security programs for IBM, Harry B. DeMaio brings his own unique, commonsense approach to computer security. He has worldwide responsibility for coordinating IBM's representation to national governments, intergovernmental agencies, the media, industry and professional groups on the issues of security, auditability and systems management. He is also the industry giant's voice on the broader issues of privacy protection and international information regulation. In addition, DeMaio is charged with ensuring that all IBM divisions have the plans and products to support customer requirements for systems security. With stern visage and ramrod posture, DeMaio is a voice of authority in the area of data security. He was interviewed by* Computerworld *Staff Writer John Gallant.*

Harry B. DeMaio

Is security technology — both in hardware and software — advancing fast enough to keep pace with the threats to data security?

Current security technology has some gaps in it. . . . We need, for example, to have personal identification capabilities more comprehensive than simply the password, which has some fundamental weaknesses inherent in it. There are technological approaches to that, which, at the moment, are not viable from a marketplace standpoint.

But I'm also concerned about whether the current technology is being used to its maximum. . . . There is a substantial amount of technology available in the area of access control, certainly in encryption, which is available in the market today and is not getting full usage.

In a ranking of threats to data security, you list external attack, or "hacking," as the least likely, yet that area has received the greatest publicity. Has that, perhaps misguided, emphasis on external attack shifted attention from more important concerns?

I don't think so. I don't think the average businessman has zeroed in exclusively on external attack. I think that to the extent it raises the awareness level on the security problem overall, it's had some beneficial effect. On the other hand, it's also raised the question in the public's eye of whether all telecommunications systems and all computing systems are susceptible to anybody who has a computer and a little bit of knowledge. That implies we've got a fundamental problem with anything that uses this modern technology, which is harmful.

According to a press release from your Armonk, N.Y., office, attention to data security has been a matter of company policy at IBM for some time. How is that policy evidenced?

In a variety of ways. We have made a number of contributions externally for studies in this area. Throughout IBM's history, we have also produced several thousand publications dedicated to this. At the moment, several hundred of those are actively useful. They range all the way from executive briefings right down to very detailed manuals on how to use a specific product.

That concern is also manifested in our product line. It's part of the fundamental design criteria for most of our products.

It's manifested in the number of classes and seminars we've run, both free of charge and for a fee. It's also manifested in our advertising. We've had a number of corporate advertising campaigns focusing on security; we plan to have another in the early part of this year.

We've worked in close harmony with governmental agencies, both

See **DEMAIO** page 16

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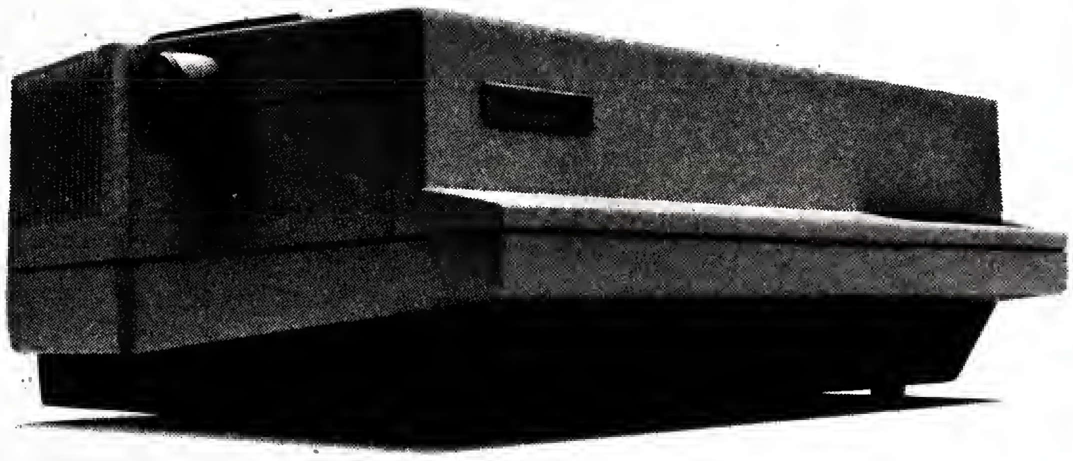

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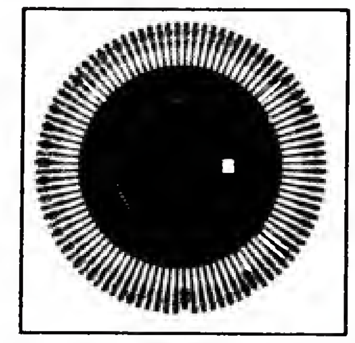

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DEMAIO

from page 15

here and overseas, as to what should and should not be done to ensure that security is part of the social and political climate. We've talked to God knows how many members of the media on the topic, and we've tried to make ourselves as available as possible. We've trained our marketing organization in security issues and our support and development organizations as well.

> "*I know a fair number of managers who are not DP experts, but who can still ask some pretty intelligent questions when it comes to audit trails, when it comes to security, when it comes to whether information is protected or not. They also can be stubborn enough to say, 'Show it to me, and show it to me in a way I can understand.'*
> — Harry B. DeMaio, director of data security programs for IBM"

You have said management must push security all the way back to the design stage. How can management in a user company affect the design of systems in a vendor firm?

What I meant was systems management, those people who have an affect on the development of applications. In the design stage, these people can ensure security in a number of ways. They can ensure it through quality assurance programs and by having people engaged in the specification process who can demand that, as part of the overall specifications for the application being developed, security will be a high-priority item.

Can they monitor that in any technical detail? That depends on the management involved. I know a fair number of managers who are not DP experts, but who can still ask some pretty intelligent questions when it comes to audit trails, when it comes to security, when it comes to whether information is protected or not. They also can be stubborn enough to say, "Show it to me, and show it to me in a way I can understand."

Can data be too secure?

Data can be too secure if there is more expense, both operationally and in terms of hardware and software being put on it, than it is really worth.

There is an economic aspect to this thing. If you're slowing down your operations, if you're making it impossible to do the job or if you're losing opportunities as a result of locking up information beyond its inherent value, the answer is yes, data can be too secure.

But, I want to make the point that that's a conclusion that should not be reached too glibly or too easily. If somebody says you have more security than you need, that ought to set off a few alarms before it is accepted.

What is the most important message you attempt to convey to owners and users about data security?

I try to stress the importance of establishing some sort of evaluation scheme and developing a classification framework so they can build their security around the most important information items they have. That's not the easiest thing in the world to do. The problem with most large organizations is that if you regard all information as being in the same general class, that leaves you with a security task that's much too large to get your arms around. In the face of something that formidable, more often than not nothing happens.

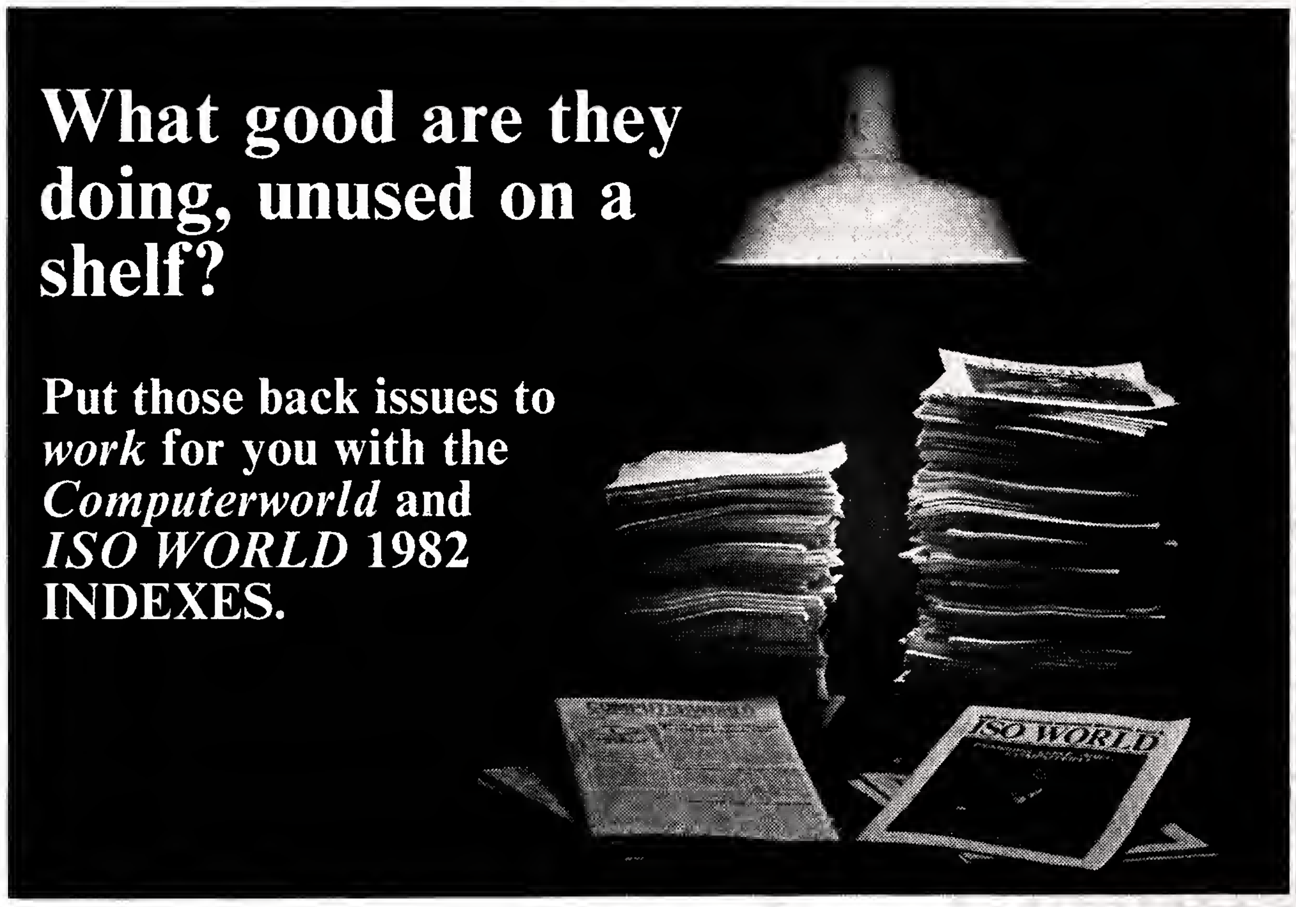
We try to persuade owners and users to develop, not in a highly scientific way or down to a dollars-and-cents detail, some general scheme for classifying that which you really regard as important. For example, if this data was lost or erroneously changed in some way, would it do significant damage to the corporation? You must do some ranking of data, even if it means listing the four or five most important items that would really sink the business if they were damaged or lost.

Is that something that is easily done?

First of all, it's not a data processing decision. It is a functional decision within the organization itself. It involves a certain amount of strategy, and it also involves a substantial amount of operational concern.

Without an awful lot of thought, you can arrive at least the first-round decisions, but then to prioritize in detail within that framework may get to be a problem. But there have to be some levels. For example: these things are important; these things I can do without; these are the things that we really, absolutely have got to have or we might as well pack up the business and turn this thing into a parking lot.

Too often there is a tendency to think just in terms of protecting the things you wouldn't want your competitor or outsiders to find out. It's the intelligence-community view of protecting state secrets. It's very important, but it's not the entire world. The other side is to determine those functional areas where susceptibility to fraud is a concern.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ISO	IBM-PC	84
ISO	Floppy Disks	51
ISO	Modems	45
CBN/ISO	Retail Stores	53

And that's a sample of just this year. We also have Indexes for *Computerworld* that go all the way back to 1976 and Indexes for CBN back to the first — (Nov. 1978-Dec. 1979)

If you don't have all the back issues of *Computerworld* and *ISO WORLD* that you need to get the articles you want, you can order back copies for the an entire year on 35mm microform from University Microfilm, Int., Periodical Entry Dept., 300 North Zeeb Road, Ann Arbor, MI 48106 —at very reasonable rates. Or you can simply take advantage of their reprint service for individual articles.

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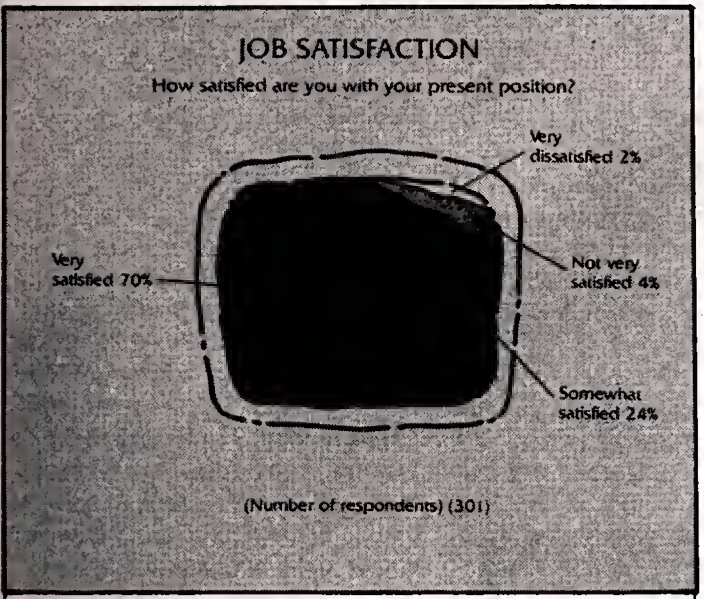
Dewar's career survey disputes 'popularly held' opinions of DP professionals

Computer professionals expressed great satisfaction with their career advancement and particular jobs when they were interviewed for Dewars "White Label." And while 78% majored in some kind of mathematical or technical field, many expressed a high regard for "English" and other creative skills



Surprises for many

By Patricia Keefe
CW Staff

NEW YORK — Dewar's "White Label," the company responsible for those career achiever profiles of scotch drinkers you see in magazines and newspapers, has released the results of a nationwide survey that it claims will "hold surprises for many" by contradicting "popularly held" opinions about computer professionals.

The survey suggests that among computer professionals, the intrinsic rewards — such as creativity and learning — predominate over the extrinsic. Among the key findings:

■ Job satisfaction is extremely high despite long hours and pressure-filled environments.

■ Ninety-four percent of those polled would not leave the field; 81% would not even change to another area of DP. Those considering change most frequently cited the pursuit of a managerial role as the reason.

Moreover, 74% of those interviewed work more than a 40-hour week, while 60% also work weekends. Only 6% expressed any kind of dissatisfaction at all.

■ A liberal arts background and English language skills are considered very valuable to success by 45% of the respondents, despite employment in a technical field.

■ "Computer professionals are nearly unanimous in recognizing that narrow training alone is not the only thing conducive to career achievement," Dewar's said in its survey report.

■ Creativity is perceived as the single most important aspect of the job.

■ The "most purely practical" aspects — money, security and status — appear to be the least important.

■ Paperwork was the chief complaint of 42% of those polled, a burden that computers have failed to eliminate.

■ Other complaints included pressure (12%) and salary (9%).

Designed and conducted for Dewar's by Research & Forecasts, Inc., the nationwide survey was conducted via random interviews held last January with over 300 employed computer professionals. The report on the survey's findings was recently published as a public service for college students and other job seekers.

After polling people representing a cross-section of six computer careers — educators, entrepreneurs, systems analysts, programmers, consultants and sales/marketing personnel — the survey concluded that computer professionals are "a highly satisfied and motivated group of hardworking individuals, who achieve a large measure of fulfillment through their work."

Said Dewar's: "Computer professionals' high level of satisfaction can be explained in part by their success in moving up the job ladder." More than half (54%) of those interviewed said they were as far along in their career as they thought they would be at that point five years ago. Another 28% found themselves further along their career path then they had anticipated.

Key to the successful pursuit of their careers

See **CAREER** page 18

PRESENT WORK SITUATION BY WORK CATEGORY

	Work Category					
Present Work Situation:	Educators	Systems Analysts	Computer Programmers	Consultants	Entrepreneurs/ Run Own Business	Sales
	%	%	%	%	%	%
Work mostly independently	55	12	38	59	17	47
Work closely in a small group	22	53	27	28	22	30
Primarily manage others	22	33	35	9	59	14
(Number of respondents)	(55)	(57)	(37)	(32)	(41)	(57)

(Number of respondents) (301)

DP job personalities

NEW YORK — Computer professionals can be broken down into three distinct categories determined by the degree of commitment they give to their jobs, in terms of both time and intensity, according to a survey sponsored by Dewar's "White Label."

The three working personalities identified in the survey are:

■ ***Computerholics.*** Comprising 22% of those computer professionals polled, they devote at least 50 hours a week to their jobs, frequently work weekends and function in "extremely hectic" work environments.

■ ***Overtimers.*** The majority (57%) of those polled, they work 41 to 50 hours a week.

■ ***Nine-to-Fivers.*** The remainder (21%) of the sample, they typically devote 40 hours a week or less to their jobs, rarely work weekends and work in a "generally steady or relaxed" work place.

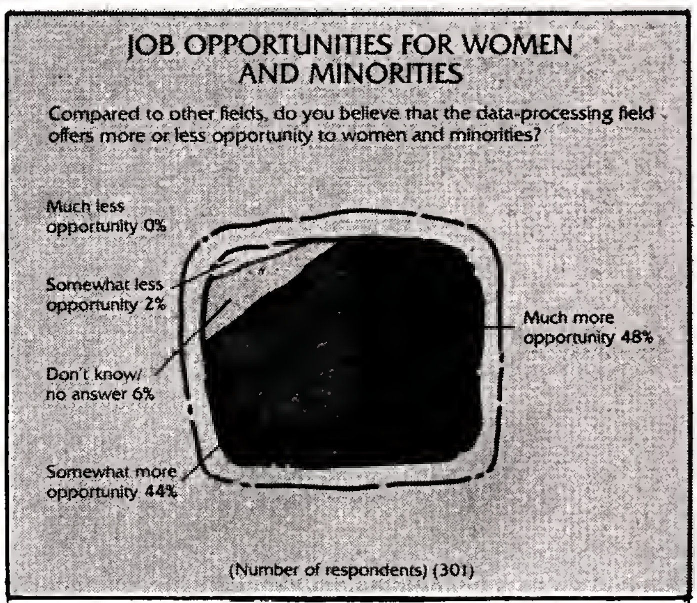
The professionals in the three categories were found to be equally satisfied with their jobs and, with few exceptions, did not differ in terms of the goals they seek or the rewards they find in their work, according to the survey report.

Most of those interviewed worked either in small groups or independently. The exceptions, however, were "quite telling," Dewar's said.

For example, computerholics are nearly twice as likely as nine-to-fivers to seek personal growth in their careers — 55% ranked this nine or 10, on a scale of one to 10, compared with 41% of the overtimers and 29% of the nine-to-fivers. And computerholics are more likely to be motivated by strong personal interests in choosing their career path — 58% ranked this nine or 10, compared to 50% of overtimers and 43% of the nine-to-fivers.

In terms of work rewards, computerholics are far more likely to achieve satisfaction from helping others solve problems — 59% ranked this nine or 10, compared with 42% of overtimers and 36% of nine-to-fivers.

Moreover, the study found that computerholics bring an intensity to everything they do. They reportedly are better educated, valuing nonmath and non-computer-science courses more than their less driven colleagues. Also, they are twice as likely as the nine-to-fivers to believe that their careers are further along than they had expected they would be. Computerholics were found most prevalently among entrepreneurs and marketing personnel.



All charts from Dewar's Career Profile: Computer Professionals

Job mart explosion

NEW YORK — Don't be surprised if the next up-and-coming young hotshot bubbling over about his fast-track career in an advertisement for Dewar's "White Label" scotch turns out to be a computer professional. The explosion in the computer market has produced an accompanying explosion in the job market, according to the results of a nationwide survey recently released by Dewar's.

Careers in computer fields have expanded tremendously in the past few years, offering attractive positions and salaries in an otherwise depressed economy, the study said. The "gold-rush atmosphere" is spurred by tales of entrepreneurial wizards; classified sections are filled with ads for computer professionals; and courses that teach computer science and basic data processing skills represent one of the few educational fields showing any growth.

According to U.S. Department of Labor projections, the total number of people employed in the computer field is expected to reach 1.2 million to 1.3 million by the end of the decade, up from 750,000 in 1980, Dewar's said. The number of both programmers and systems analysts is expected to swell to about 350,000, yielding respective increases of one-half to two-thirds above 1980 levels.

Programming and software development offer by far the best job opportunities, according to two-thirds of the survey respondents. The second choice was computer applications, attracting the endorsement of a third of the sample. Only one in 10 polled cited entrepreneurship as offering the best job opportunity.

In terms of job opportunities for women and minorities, 98% of the survey sample strongly believes the DP field offers more to these groups than any other field; 48% declared DP offers

See **JOBS** page 18

Shop floor tech stories wanted

Computerworld's March 26 Special Report will take an in-depth look at computerized manufacturing systems and how they are altering production, planning, operations — and those delicate relationships between the traditional DP departments and the factory automation specialists.

The Special Report will focus on computer-aided manufacturing and engineering, manufacturing resource planning, robotics, inventory and shop floor control. More important, we will look at the impact of these technologies on traditional manufacturing operations.

If you would like to contribute a tutorial or application story to the report, send your three- to six-page double-spaced manuscript by Feb. 10 to Bill Laberis or Peter Bartolik, *Computerworld*, 375 Cochituate Road, Box 880, Framingham, Mass. 01701. Accompanying charts, photographs and other graphics are welcome.

CAREER from page 17

are traditional English language skills, according to 77% of those polled. The statistic is notable because 78% of those interviewed held college degrees in some kind of mathematics, science, engineering or computer-related field. Another 11% hold degrees in other fields.

"While acknowledging the technical requirements of their field, computer professionals believe 'being creative' is the single most important aspect of their present jobs," according to Dewar's.

Job rewards

Another reason for the high level of job satisfaction is that the personal goals which led the survey respondents to seek a computer-related career have been fulfilled, according to the study. Strong personal interests, personal growth and employment opportunities play a major role; status and relocation possibilities are not strong incentives, the respondents said.

Topping the list of rewards gained from the work experience were the opportunities to be creative, learn new skills and solve problems. Working independently and socializing with colleagues also ranked high.

More information on the career reports is available through the Dewar's Center for Career Development, Suite 1100, 110 E. 59th St., New York, N.Y. 10022.

JOBS from page 17

"much more opportunity" to women and minorities. The report points to a recent National Science Foundation report, which estimates that the number of women in the computer field grew 44% between 1980 and 1982 alone.

However, the survey also quoted respondent Irene Anderson, an advisory systems engineer, whose enthusiasm was somewhat tempered. "There are opportunities for women — in a sense," she was quoted as saying in the booklet detailing the survey results. "There's a high percentage of women at the entry level. Women can get up to first- and second-level management, but after that the pyramid becomes very pointy, and the opportunities aren't there, except in theory. It's still a man's world."

One possible reason for this: Several survey findings concerning women DPers found that half the women, but only a fifth of the men, work 40 hours or less a week. At the other extreme, a third of the men, but only a tenth of the women, spend 51 hours a week or more working at their jobs.

In addition, survey results state that women in the field are "somewhat less likely" than men to have a college degree. This is broken down into 91% of 259 males and 76% of 42 females polled.

Survey respondents were also asked to advise people considering data processing as a career. The responses included:

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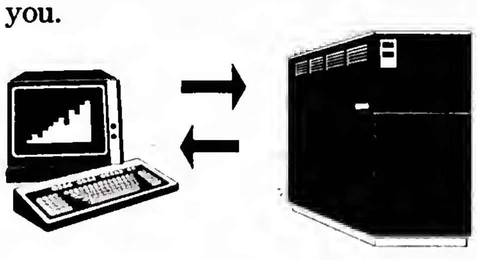

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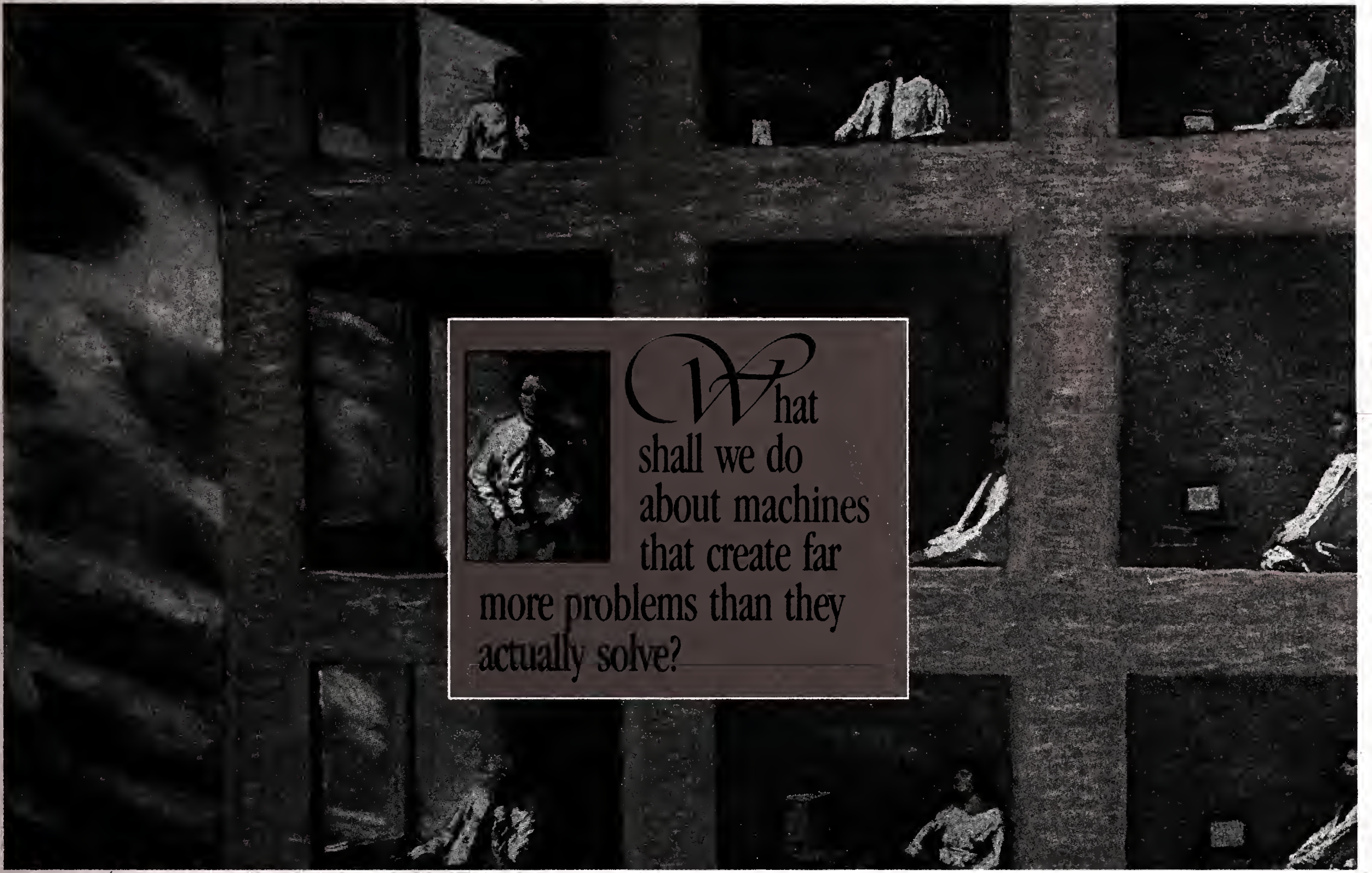

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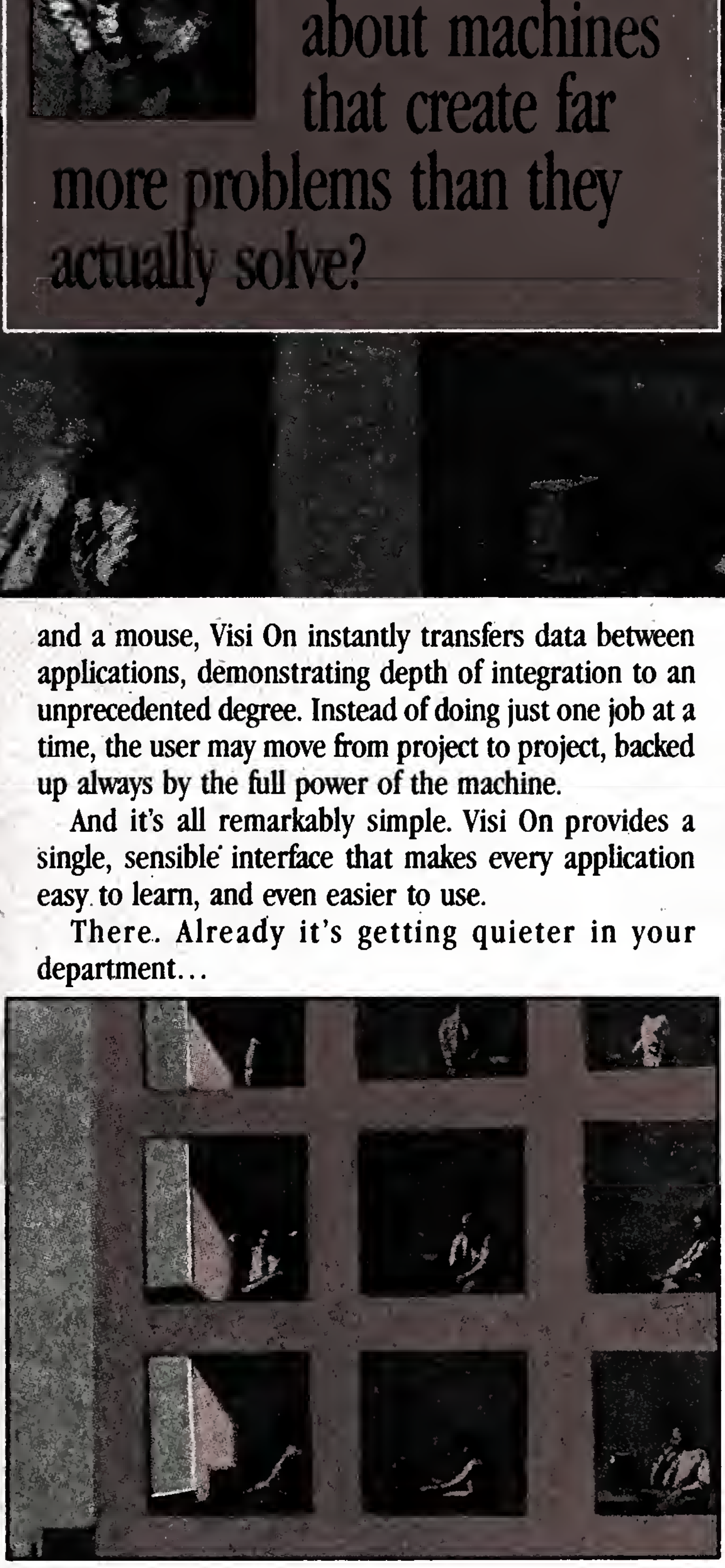

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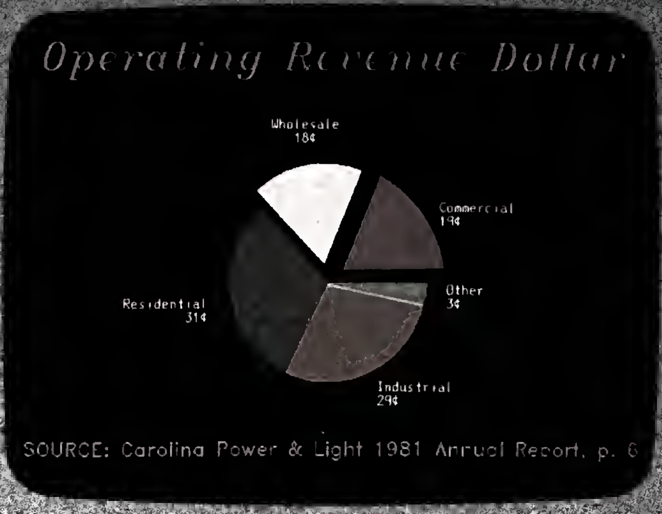

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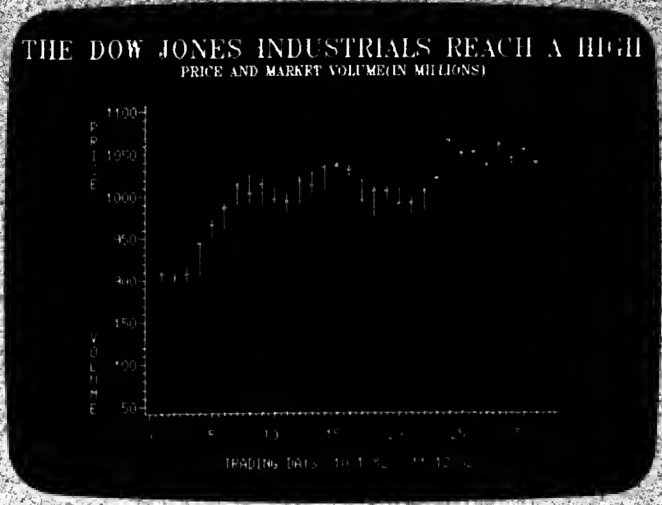

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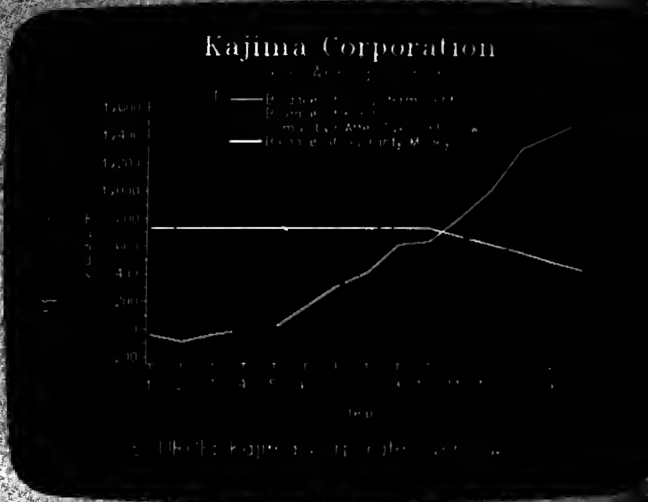

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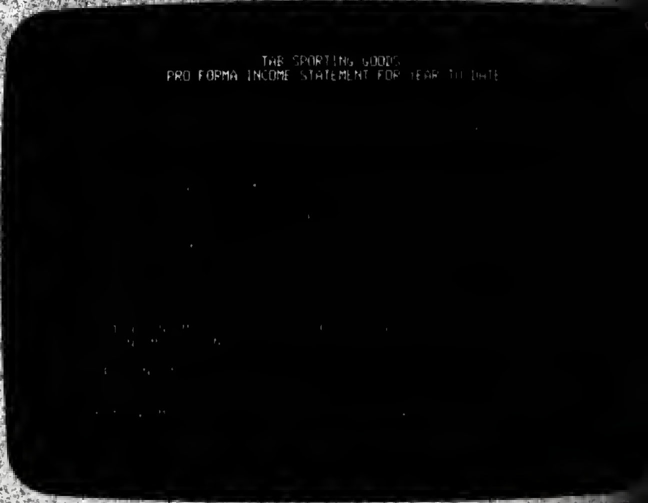

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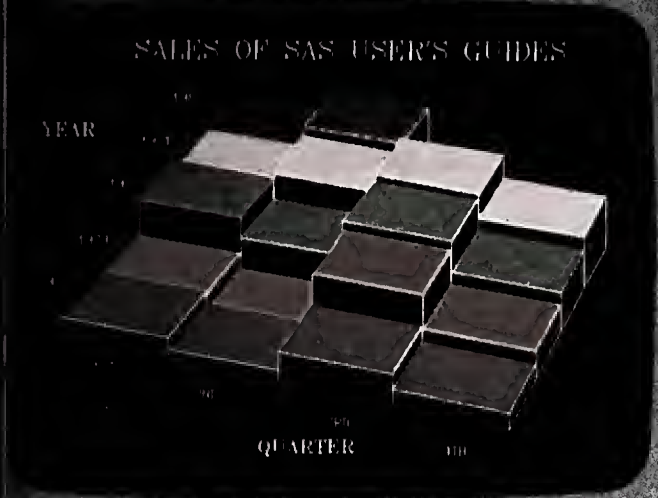

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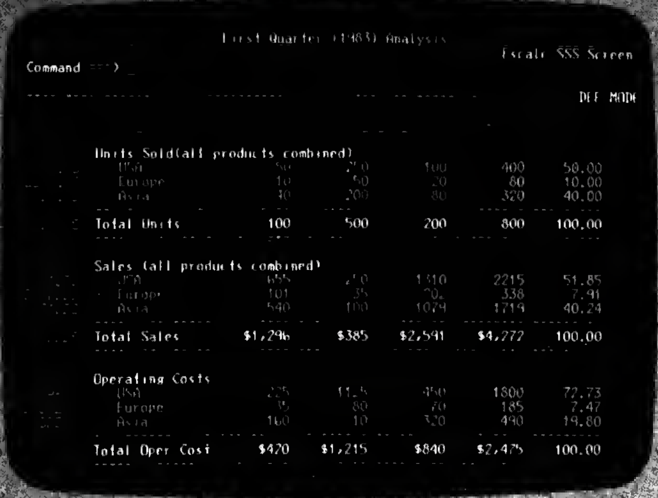

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        Units Sold(all products combined)
           USA              50      250      100      400    50.00
           Europe           10       50       20       80    10.00
           Asia             40      200       80      320    40.00
        Total Units        100      500      200      800   100.00

        Sales (all products combined)
           USA             655      250     1310     2215    51.85
           Europe          101       35      202      338     7.91
           Asia            540      100     1079     1719    40.24
        Total Sales     $1,296     $385   $2,591   $4,272   100.00

        Operating Costs
           USA             225     1125      450     1800    72.73
           Europe           35       80       70      185     7.47
           Asia            160       10      320      490    19.80
        Total Oper Cost   $420   $1,215     $840   $2,475   100.00
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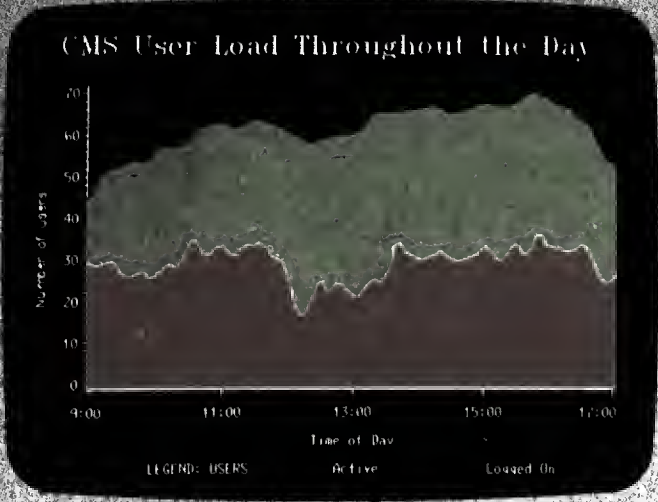

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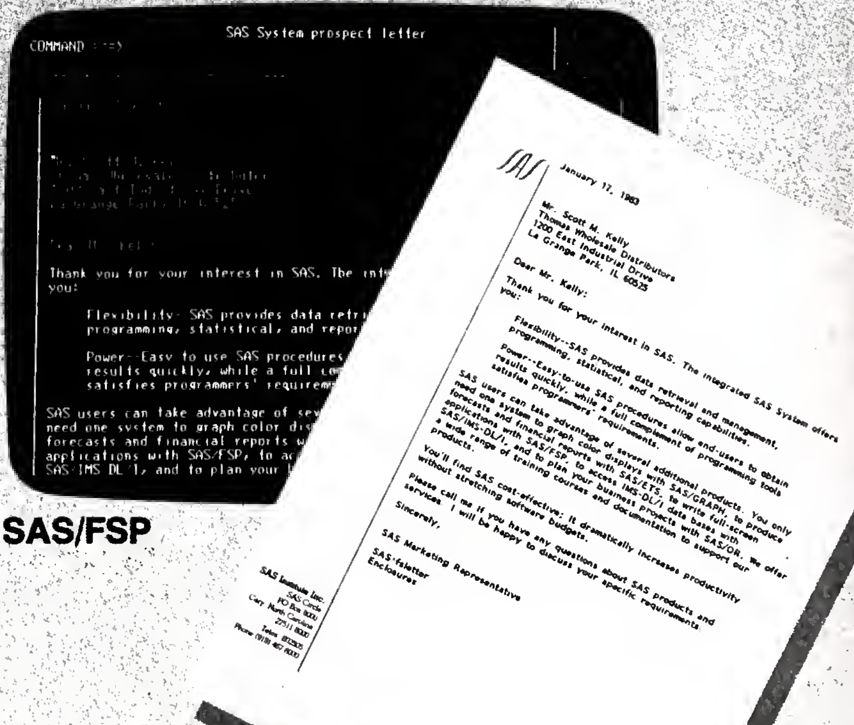

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DP director pockets fees for free service

By James Connolly
CW Staff

CLINTON, Miss. — City officials were disturbed but not outraged when the county data processing director pocketed the fees they paid to have their tax rolls processed on the Hinds County computer.

"It was the only way we could get it done," reasoned Mayor Walter Howell.

But the sheriff was called in when it was learned that the services for which Clinton reportedly paid Ray Palmertree almost $7,000 were provided free to other communities. Clinton and the county realized that Clinton, too, could have free service.

Address was clue

City and county officials said that since the early 1970s, Clinton paid Palmertree and his predecessor as much as $1,250 a year to run the city property tax bills on the county's computer. The arrangement came to light when Palmertree's $2,400 bill for his 1983 work carried his home address rather than the county courthouse in nearby Jackson.

The city and the county board of supervisors questioned why Palmertree, who is salaried at $33,500, was performing private work on the county's Sperry Corp. 90/40. The supervisors, noting that an assistant attorney general said it is illegal for public employees to use public property for personal gain, advised Clinton to pay the $2,400 to the county.

It was then that Clinton officials discovered that other small cities and towns that didn't have their own computers received similar services for free or for the cost of the tax forms. The city refused to pay, and the county supervisors agreed not to press for payment until an investigation is complete.

It also was revealed that Palmertree collected $75 and an assistant, Bob Flippen, collected $1,230 from the county school system for programming fees.

Some supervisors have demanded that Palmertree and Flippen, who also remains on the job, pay the county whatever they collected.

But Mayor Howell, in Palmertree's defense, said, "I think it reached a point where he couldn't do all of the required work in a 40-hour week. He was vastly understaffed. If he hadn't done it, then it wouldn't have gotten done, and we figured we were going to have to pay for the service wherever it was done."

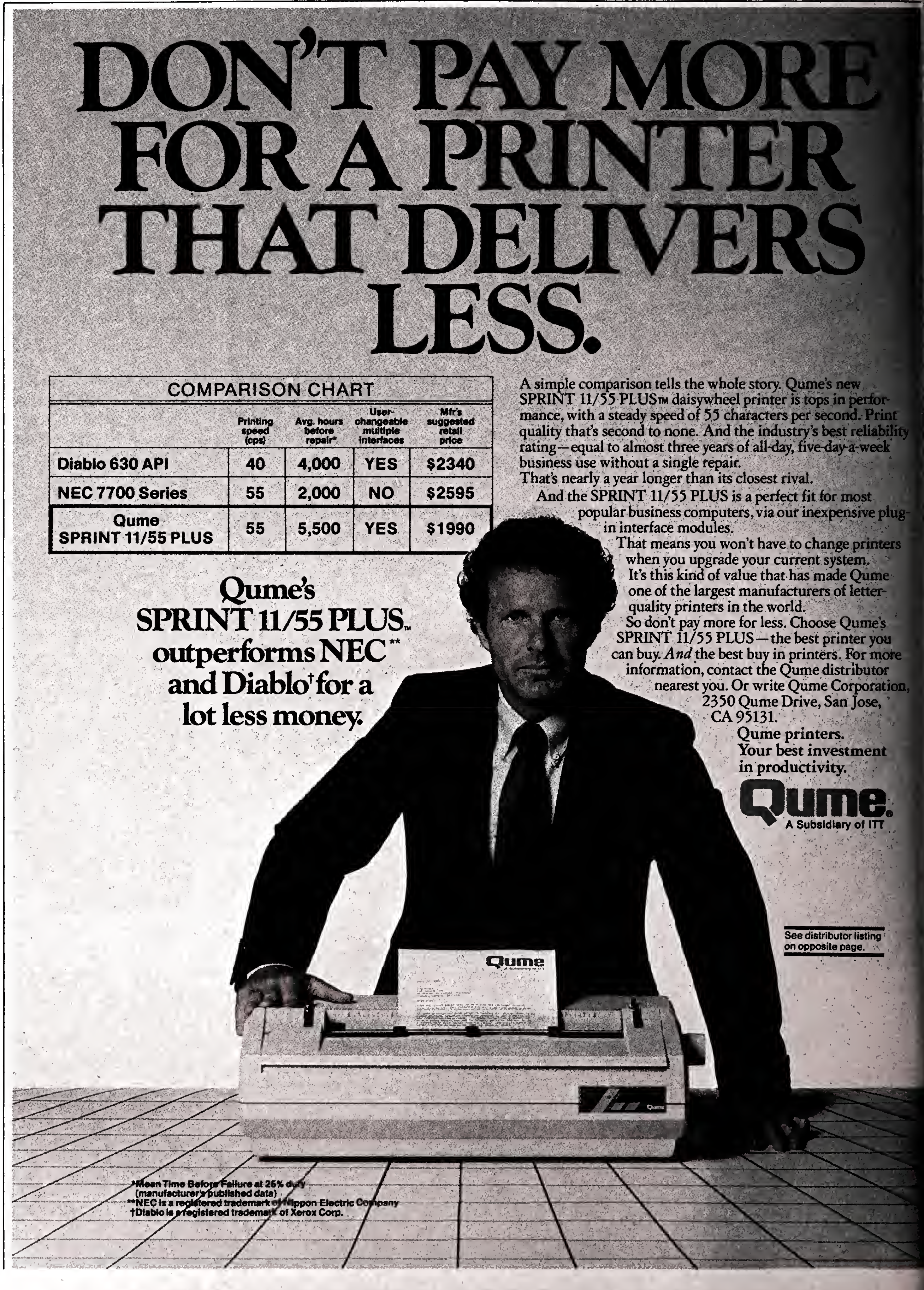
MANAGERS ON THE MOVE

MARVIN L. ZEICHNER has been promoted to head the newly created management information and software department at The Mitre Corp. in Bedford, Mass.

While at Mitre, which performs systems engineering for the U.S. Department of Defense and other government agencies at the federal, state and local levels, Zeichner has been a member of the technical staff and served as a group leader in several departments, including command and control systems, information distribution systems and bus network systems.

Zeichner has also been data processing manager for Albany Data Processing, Inc., vice-president of Computer Services, Inc. and an engineer for Raytheon Co., where he was a staff scholar.

He earned a bachelor's degree in electrical engineering from the City College of New York and an M.S. in mathematics and control systems from Harvard University.



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IRS still depends on paper in computer age

By James Connolly
CW Staff

WALTHAM, Mass. — An estimated 96 million tax returns will pour into the Internal Revenue Service by April 15, piling onto a heap of more than 1.5 billion returns and other documents that the agency stores in a largely manual, hard-copy system.

Storing and retrieving those documents costs the IRS $35 million a year. It takes up to six weeks to retrieve a tax form, and there is almost no automated support — whether mainframe or micro — for IRS examiners and other personnel.

Decades into the computer age, the bureaucracy that is so much a part of the life of every American business and worker still relies on paper and the human hand, concedes the man in charge of IRS data processing.

"We really haven't supported our people the way we should. We have to get data to the people on the firing line. Now we hope to crank up something by the late 1980s," IRS Associate Commissioner M. Eddie Heironimus said at a recent tax seminar here.

For 1984, the IRS is stepping up its efforts to automate, particularly through the use of optical character recognition (OCR) equipment to process forms and laser disk storage to save storage costs and make data more readily available.

Employers have begun receiving OCR forms for use in making federal tax deposits to authorized banks. The forms, used in a pilot project in 1983 in the area served by the IRS' Cincinnati regional service center, are now being used nationwide.

The OCR forms replaced keypunch cards and were mailed to companies in December. Those forms are preprinted with taxpayer identifying information or are available blank in emergencies.

Employers may designate the forms for use in any tax quarter and for any of 10 different types of payments by blackening the appropriate boxes. In the past, specific cards were used for specific taxes in specific quarters. A slight mistake meant payments were improperly credited, and the taxpayer was judged delinquent.

"The OCR scanner can read, number and perform all other necessary processing of federal tax deposit cards at a rate of 10,000 an hour. In processing federal tax deposits alone, OCR has the potential for saving 20% of current processing costs and maybe more," reported Joseph H. Cloonan, director of the IRS service center in Andover, Mass.

OCR equipment also will be used this year to process an expected 18 million individual returns on Form 1040EZ, the so-called short form. The 11-line form mailed to taxpayers Dec. 26 includes blocks for taxpayers to fill in appropriate numbers and instructions on how to fill in the form.

The 1040EZ form can be used by single taxpayers who earn less than $50,000 and have income only from wages, salaries, tips and interest.

The next form scheduled to be converted to OCR is Form 1099, the form banks use to report interest payments. However, 40% of the 1099 reports now go to the IRS on magnetic tape, ready to run.

In coming years, the IRS will install laser disk storage equipment at its 10 regional service centers. Those plans developed after the agency operated a pilot project at its Fresno, Calif., center last year.

"Right now we hope the centers can take all of their Form 941s [business returns] and put them on laser disk. Then if we need hard copy later, we can make it off the disk," he said.

"That means we could destroy the original hard copy, which, when we carry this out with other forms, could make the service centers virtually paperless," Heironimus said.

The goal is to give tax examiners the ability to call up a return on a display screen and conduct an audit without paper forms. Currently, less than 10% of the IRS examiners have access even to personal computers, and those people are using "Radio Shack-type home computers," noted Heironimus.

One area where the agency expects immediate success in several regional centers is with collections. On-line systems will allow collectors to call up delinquent accounts, have the system dial a telephone number and route it for the least expensive rates and make notations on whether the taxpayer promises payment.

But Heironimus said the biggest step the agency will take toward full automation will be when it goes on-line with a new system of mainframes, replacing its Honeywell, Inc. 2050A batch processing system and its Control Data Corp. 3500 online systems.

Those systems are programmed in assembler language, Heironimus said, while the IRS wants to use Cobol. The agency is in the process of rewriting its 2,400 programs, which already must be updated constantly as tax laws and regulations change.

When the Cobol system is ready, in two years, it will be used on Sperry Corp. 1100/80 series systems that are already in place in the service centers. The current system has been in place since 1962.

Controversial step

One of the more controversial IRS steps toward automation has been the experiment now under way in four districts, where the agency buys population-profile information from research firms, such as those that provide credit card companies with the names of prospective customers.

That data, according to IRS officials, gives the agency typical incomes for given neighborhoods. The information will let computers flag unusually low returns mailed from high-income neighborhoods and will let examiners decide whether those returns should be audited for fraud.

The agency met resistance to the program and found mailing list firms reluctant to sell the IRS the needed data. However, it found other firms willing to sell the data, and the pilot program is under way, despite objections from civil libertarians.

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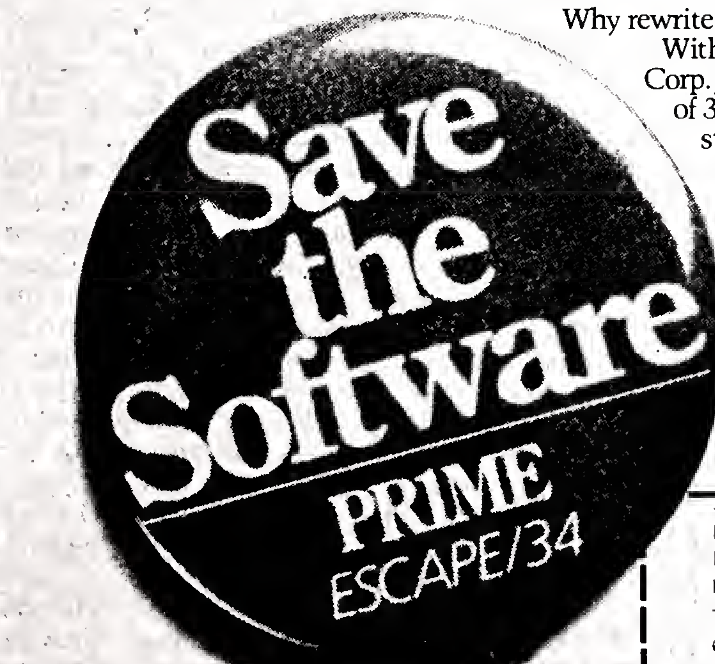

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Apple announces University Consortium program

Dartmouth to install Macintoshes

By Patricia Keefe
CW Staff

HANOVER, N.H. — "An apple for the teacher" will be taking on a new meaning for faculty and students at 24 colleges and universities across the country as a result of Apple Computer, Inc.'s new Apple University Consortium program.

The consortium was announced last week when Apple introduced its 32-bit Macintosh microcomputer [CW, Jan. 23]. Apple anticipates that by the end of 1984, at least 50,000 Macintosh micros will have been placed on college campuses nationwide.

Major universities such as Yale, Stanford, Dartmouth, Brown and the University of Michigan each expect to purchase $2 million worth of Apple products — mainly Macintoshes — over a three-year period, the vendor said. More than $60 million in commitments reportedly has been made to date under the consortium program.

At least 2,000 Macintoshs have already been earmarked for Dartmouth College here, where officials are planning to greet faculty and incoming freshmen with an offer they hope won't be refused when school opens next fall: a turnkey package at a discount price for personal use at home, in the office or in the dormitory.

Long a technological trailblazer in the academic community, Dartmouth, the birthplace of the first on-line time-sharing system and the Basic computer language, is about to embark on yet another pioneering odyssey. It will extend its 20-year-old campus time-sharing system into dormitories by way of personal computers linked to a campuswide network, the latter scheduled for completion this summer.

The preferred personal computer here is the Macintosh. Part of the new Apple 32 Supermicro family, the Macintosh is based on the same technology developed for Apple's Lisa, which incorporates a 32-bit Motorola, Inc. 68000 microprocessor, high-resolution graphics, windows, a mouse and a graphics interface said to allow users to utilize the machine without having to learn difficult computer commands.

The Macintosh is transportable in its own carrying case and contains 64K bytes of read-only memory and 128K bytes of random-access memory. An extensive library of software packages and peripherals is being prepared for the machine, which is aimed not only at the college market but at business markets and other professionals, Apple said. The vendor estimates that more than 500 packages will be available for Macintosh and Lisa models by the end of 1984.

Dartmouth's computer store will also carry a few other alternatives — such as IBM's Personal Computer XT and PCjr. The Macintosh was chosen because it is "extremely powerful and user friendly," according to William Arms, vice-provost for computing and planning. "It has very good graphics and an excellent [propri-

See **APPLE** page 28

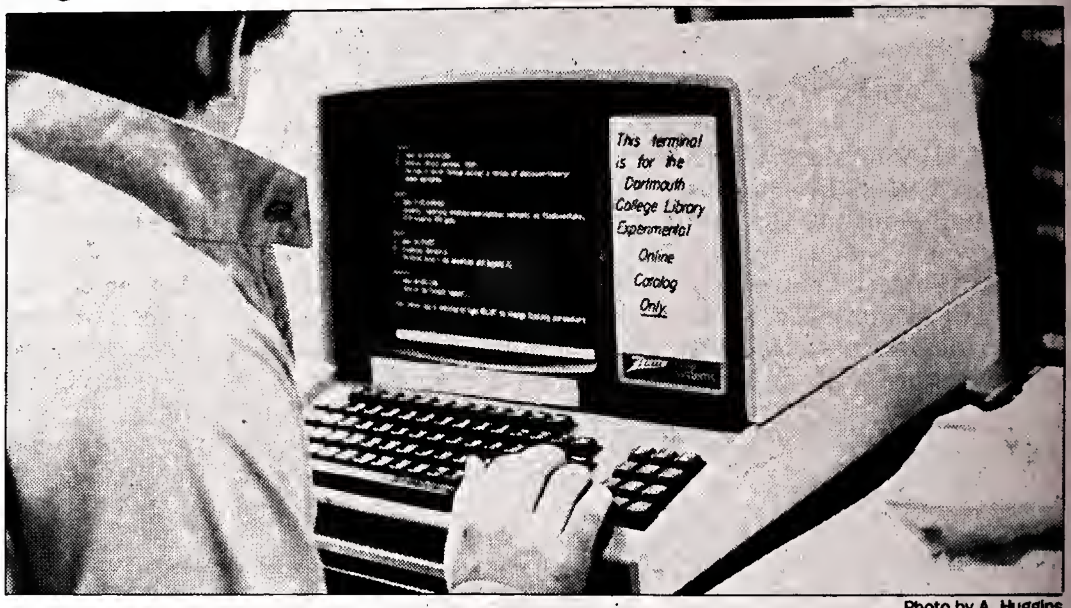
This terminal is for the Dartmouth College Library Experimental Online Catalog Only.

Photo by A. Huggins

Accessing Dartmouth's on-line catalog

Minimal problems expected

By Patricia Keefe
CW Staff

HANOVER, N.H. — A campuswide time-sharing network of the magnitude planned at Dartmouth College here is not without its planning problems. But thanks to the Ivy League school's 20 years of experience operating its own network, any problems are expected to be minimal, according to William Arms, vice-provost for computing and planning.

College officials are planning to offer students the opportunity to purchase at a discount, over their academic tenure, their own personal computer. Students will be able to use the computer for stand-alone word processing and graphics production and as a link to the Dartmouth College Time-Sharing system and the services it offers. The school will provide Apple Computer, Inc.'s Macintosh, as well as some IBM Personal Computers and possibly some Digital Equipment Corp. micros.

The details involved in an undertaking of this size are many, including system security, training, user resistance, technical specifications and equipment and system access to all student, faculty, academic and administrative functions. However, many of these details have been minimized by procedures and services already provided by the school's Kiewit Computing Center.

One big detail — system security — might appear to be most important. The recent wave of publicity concerning student hackers, also called systems violators, suggests that by opening up its computer system to the student population, Dartmouth could be unleashing a serious threat to its system security.

Not so, Arms said, for two reasons. "First, we have a remarkably honest student population. At the same time, we also have 20 years of experience operating a very widespread computing environment." He noted that the school's Kiewit Computing Center staff has worked out simple but secure methods of protecting data.

"We actively encourage students to break our security measures — and to let us know," Arms said. "Lots [of students] have tried to break in, but there have only been three serious break-ins over the past 20 years, each of which has led to an improvement in security procedures."

A sudden rise in the computing population can also threaten the system's health, but Arms does not expect a sudden rash of system crashes and prolonged downtime during the fall semester. Acknowledging that the impact of the new user population on the central computer will be difficult to predict, the vice-provost said the school usually incurs annual system growth of 25% and is increasing the system size accordingly.

Training is another area of concern. It is one thing to encourage widespread computer use and to provide the necessary equipment; it is another to meet a horde of potentially frustrated end users.

Again, Arms considers Dartmouth more than adequately prepared. Within the computing center is a department called Service to Academic Users, with a staff of 12 professionals and 30 to 40 students. The size of the support staff is proportional to the number of services provided, not the number of users, Arms explained.

During Freshmen Week, time will be allotted to introduce students to their new learning tools. Further, Arms claimed the Macintosh is so user-friendly that the student learning time is relatively short. Videotaped instructions scheduled during the first few weeks of school will also be available.

Grants from Apple, the Sloan Foundation and Carnegie Corp. will provide funds to develop instructional materials and to train the faculty.

Dartmouth will turn to another existing service to provide students and faculty with computer equipment: the computer store, located in the computing center.

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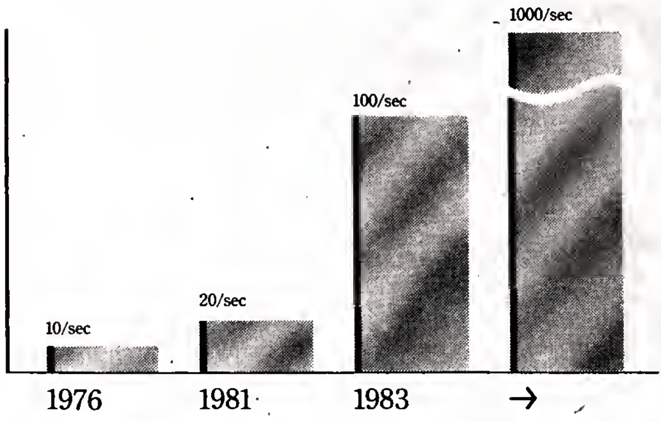

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The TXP system also features parallel data paths. Manipulating 32 bits of information in a single cycle, two 16-bit operations in the same cycle.

And TXP incorporates extensive pipelining, to process multiple instructions simultaneously. Each processor overlaps instructions in three levels: Fetching one, while preprocessing a second, while executing a third.

While helping TXP deliver full 32-bit power, for less.

Cache memory pays off in faster response times.

Cache memory is a high-speed data storage area between the processor and main memory. It lets the processor store more frequently used information closer. So it can get to it faster.

And our tests have shown that the TXP cache memory has a 98% "hit rate." Which means the requested data is virtually always nearby for fast access.

The result? Larger volumes of work can be processed in shorter amounts of time. Helping TXP to be even more productive.

Making cache memory pay big dividends.

A system you'll expand, not disband.

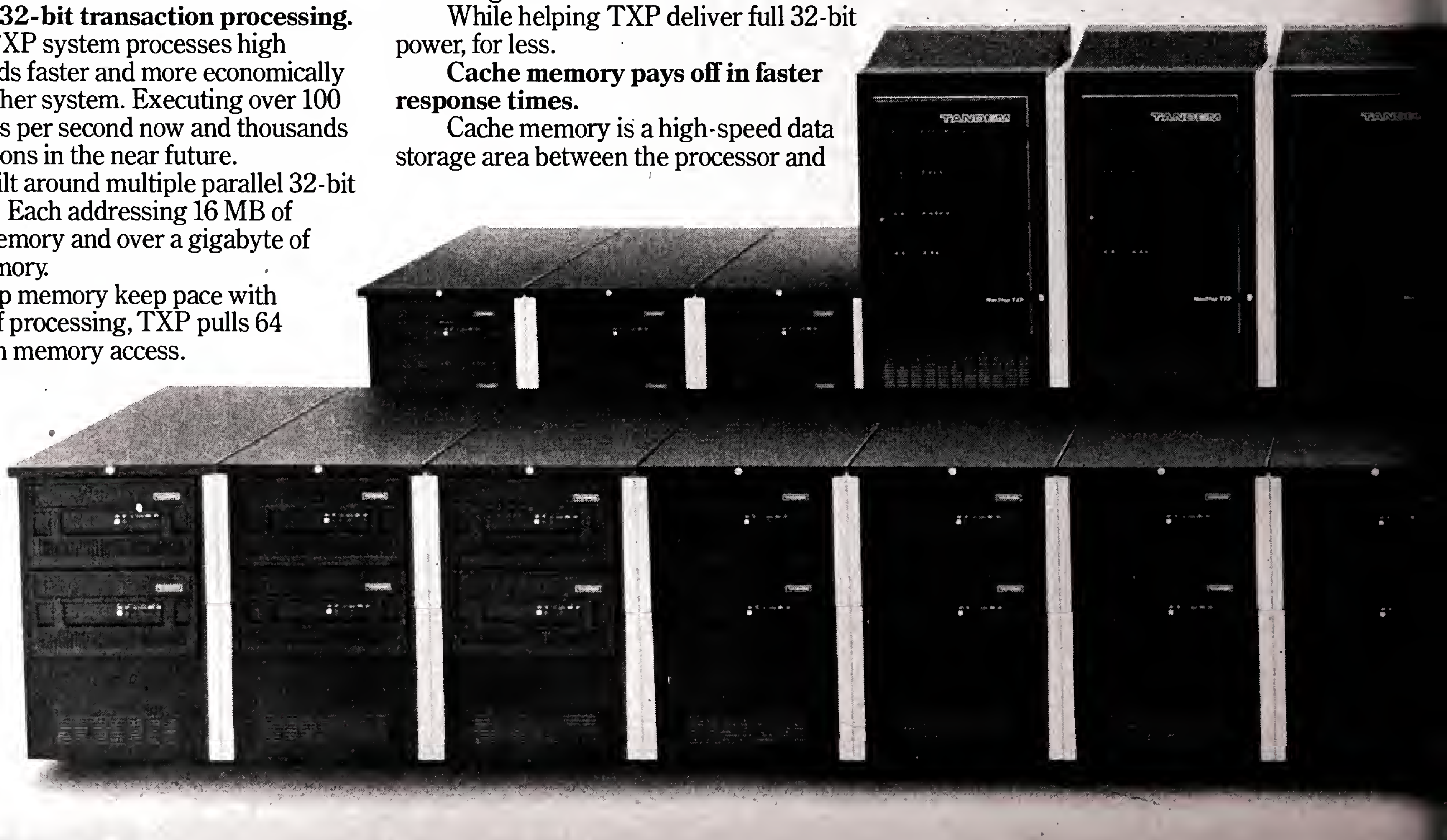
Most computer systems have very limited expandability. So if a company outgrows its computer's capacity, it usually means starting again from scratch.

Selecting and buying a larger and more expensive system.

Then reprogramming.

Then re-training.

Plus all the chaotic disruption and



XP

computer in business today.

massive loss of revenue that's unavoidable during the switch-over.

Not so with the TXP system.

It can expand from two to 16 processors. Increasing its power by a factor of eight.

That's more power than any of the largest mainframes.

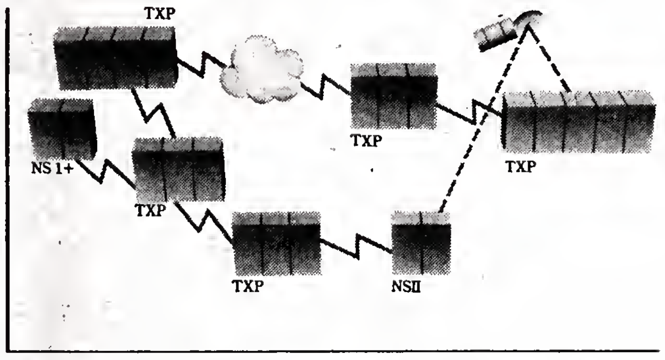
And the additional processors can be installed while TXP is running at full speed. No downtime. No reprogramming.

Still not enough power? Up to 14 TXP systems can be joined together by high-speed fiber optics. Linking the systems together as one computer with 224 processors.

But that still isn't the full potential of the TXP.

TXP systems at up to 255 sites can be joined in a worldwide network. Generating the power of over 4,000 processors.

And that gives TXP the most powerful on-line computer capacity in business.



The most powerful computer network in business today. *Users access a single unified global data base from any of thousands of terminals anywhere in the system.*

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TXP can process more information and support more programs, users and devices than any other computer designed for on-line transaction processing.

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Even devices made by IBM.

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And for over eight straight years, despite attempts by others, we've continued to lead the industry.

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For complete literature, contact your local Tandem Sales Office.

Or write Tandem Computers Incorporated, 19333 Vallco Parkway, Cupertino, California 95014.

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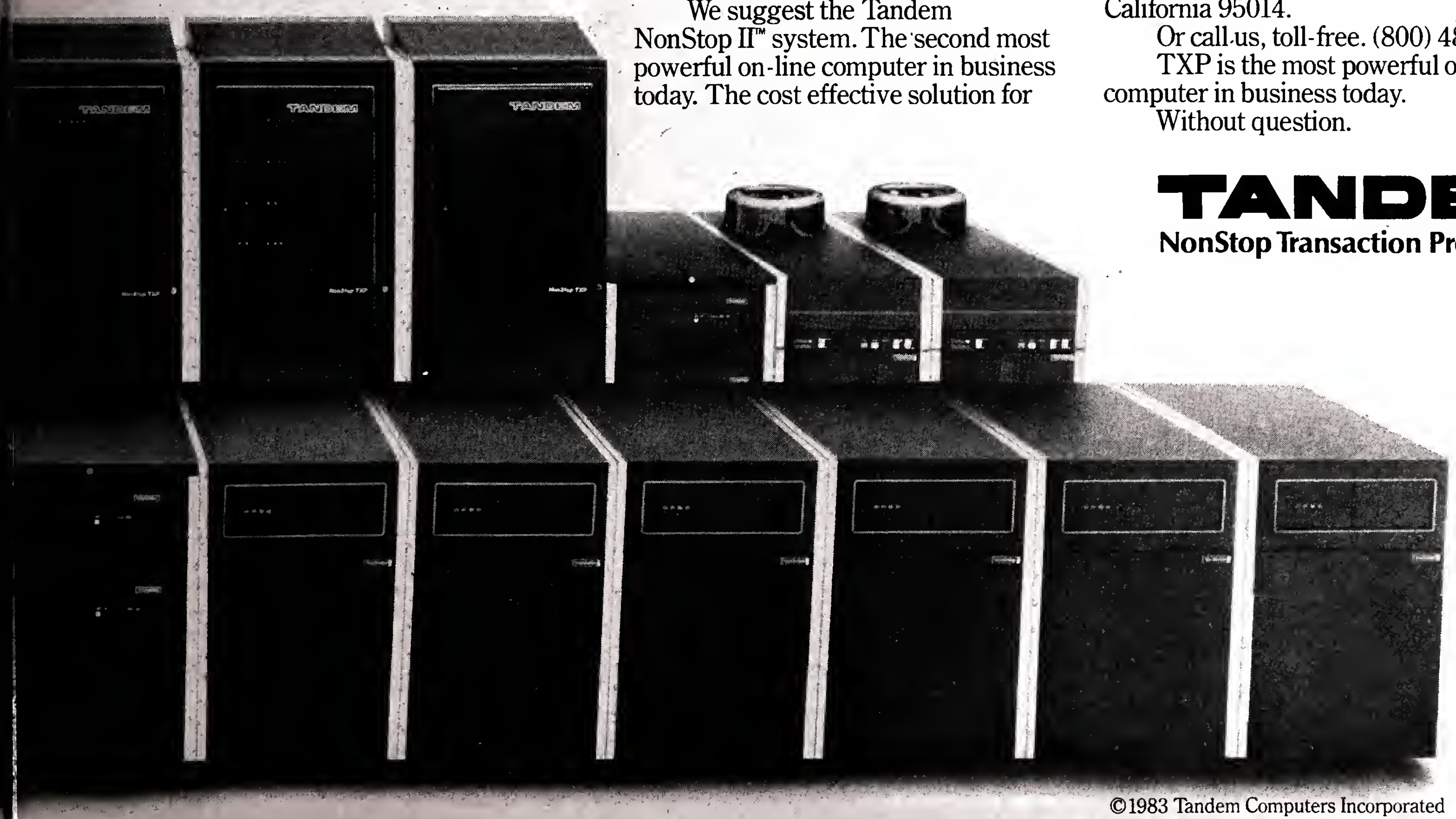

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APPLE

from page 24

etary] operating system designed around a user interface."

The private liberal arts school plans to purchase initially about 2,000 Macintoshes and to provide students with a package that includes the computer and some software at a significantly discounted price, about $1,250 (the Macintosh retails for $2,495). Payment will be spread out over the student's college career; when the student graduates, the computer will be his.

Both students and faculty will be strongly urged to use the computers, but no one will be forced, Arms said. "It is very important that [participation] be optional," the vice-provost explained, adding that it is not the school's job to tell the faculty how to teach, but rather to provide an environment to support it. Arms estimated that virtually 96% of the academic population has done some computing.

For students who do not want to buy the computer, Dartmouth will be adding a few personal computers to the "terminal clusters" now situated about the campus in public areas. However, Arms said the emphasis will be on private ownership. He noted that the personal computer has been priced so that it will be affordable by all students, including those receiving financial aid.

Students will be able to use their personal computers in either stand-alone mode or over the school network. In stand-alone mode, students can use their Macintosh to run a variety of graphics programs, avail themselves of word processing applications and write their own programs in Basic or Pascal. Using the campus time-sharing network, students can send electronic mail to faculty and friends, look up research materials in the library's computerized card catalog without leaving their rooms, perform statistical work and simulations and access the school data base.

For example, a student could write a term paper using word processing software in stand-alone mode and then link up to the time-sharing network to send the paper to a professor's electronic "address." Although the student will have a copy of the paper in his floppy disk library, getting a hard copy may be a little tricky. Nonetheless, the vice-provost said the school takes "full responsibility for providing enough public printers to meet demand." Placing printers in dorms is being considered.

Conference calls are another possibility through the time-sharing network, Arms added. Students will even be able to determine whether a book has been taken out before heading for the library, once circulation is input into the school's data base.

Course registration is computerized, as is student billing. Students present magnetic-striped identification cards when making purchases in the school's cafeterias and coffee shops, for example, and are billed accordingly. Once the network gets under way, these bills could be sent to students via electronic mail.

Dartmouth net subbing out terminals

HANOVER, N.H. — Personal computers are getting to the stage where they can be linked to function as efficiently as a mainframe-based time-sharing network, according to William Arms, vice-provost for computing and planning at Dartmouth College here.

"In the last 12 months, we have reached the crossover point where personal computers are good enough and cheap enough to [provide students with their own computers linked to the school's time-sharing system]," he said.

Dartmouth's plan to sell discounted personal computers for private student use next fall is "a big move from having [public] terminals in shared spaces," according to Arms, who believes today's powerful microcomputers have made such a move both possible and inevitable.

Moreover, Dartmouth views the insertion of computers in the academic environment as "a logical extension of what we've been doing in the past — a step forward on the curve of what we've been trying to do," the vice-provost added. Although some members of the academe believe computers are bigger than liberal arts, Arms holds that the reverse is true.

The growth of computing at Dartmouth has increased each year. In fact, Arms said, there has been no year when growth rose less than 10%. For example, the Amos Tuck School of Business Administration recently purchased 50 IBM Personal Computers [CW, May 16], resulting in a 1:7 ratio of computers to students. Reportedly, almost every course at Tuck requires the use of a computer in some way.

The school is beginning to see greater growth in this area, and as a result of its planned campuswide network of stand-alone/time-sharing personal computers, slated to take off this fall, it most certainly will experience a surge in computer use.

Currently, Dartmouth has a campuswide network that has been extended to all academic buildings except the medical school, a time-sharing system and support staff. All of the terminals within the network can talk to each other.

The school is also linked electronically to four or five colleges in the Northeast. "We had [most of this] for such a long time that a lot of things are routine," according to Arms.

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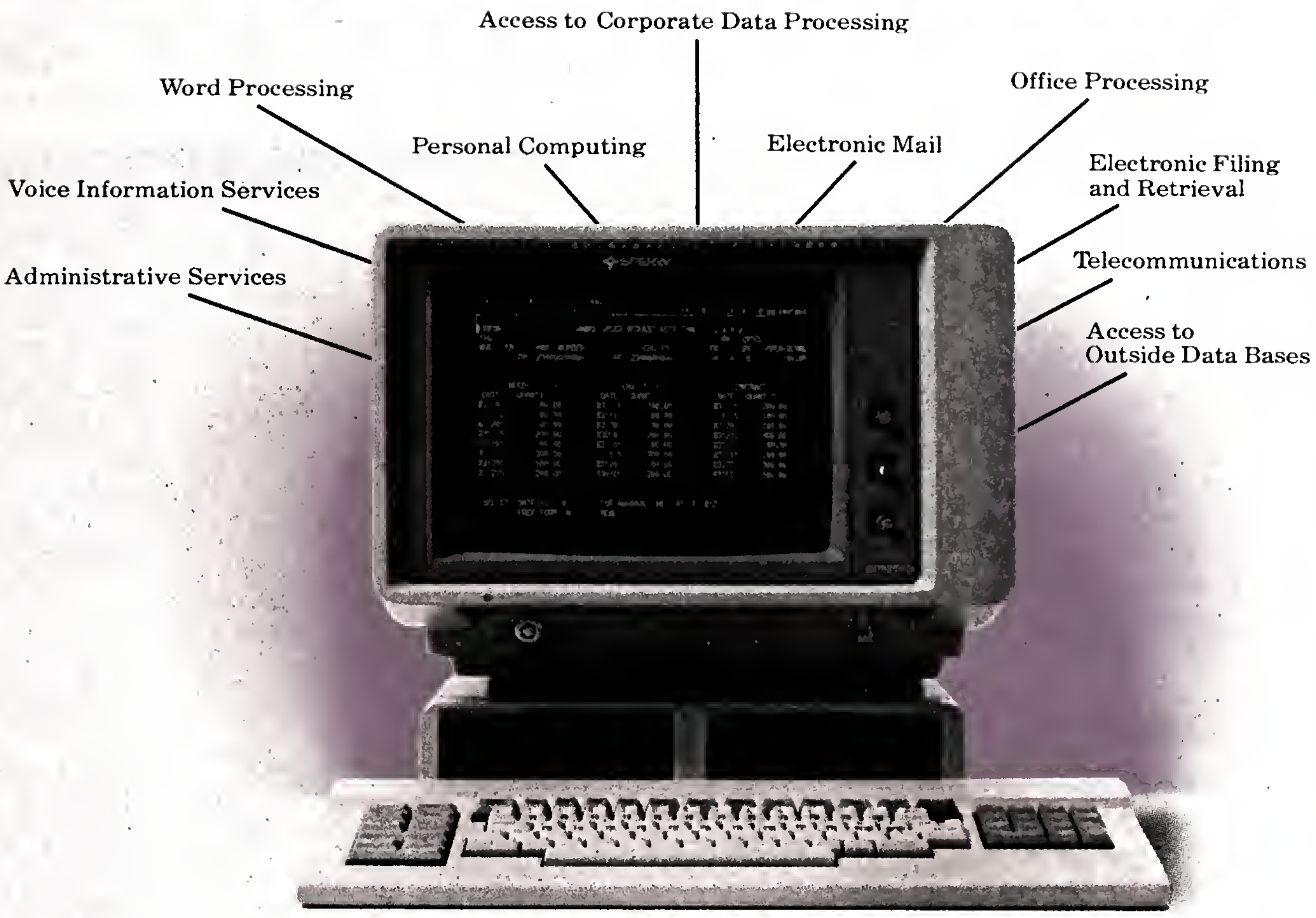
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Booklet out for banks

WASHINGTON, D.C. — The American Bankers Association (ABA) has published a booklet featuring a checklist of factors to consider when choosing bank microcomputer software.

"What About Software? Selecting a Package for Your Bank's Microcomputer" is a three-part booklet covering a definition of the nature of software, an evaluation model to use in acquiring software and hands-on case studies in which the model is used in a banking context.

The authors of the publication are from Aurora Systems, Inc. of Madison, Wis.

Single copies of "What About Software" (No. 022600), which is part of the ABA's Competitech series of booklets, may be obtained for $20 by ABA members and $30 by others from Order Processing, ABA, 1120 Connecticut Ave. N.W., Washington, D.C. 20036.

An annual subscription to Competitech, published monthly and sponsored by 44 state banking associations, may be purchased by ABA members for $195 and by nonmembers for $275 from the ABA Accounting Department at the same address.

PC-World Expo starts Feb. 1

HOUSTON — PC-World Exposition, a three-day conference and exhibition on microcomputers, is scheduled at the Astrohall here beginning Feb. 1.

Richard Dalton, editor of *The Whole Earth Software Catalog*, will speak on "How I Became Compatible With My IBM PC." Other speakers and panelists include Rod Canion, president of Compaq Computer Corp.; *Infoworld* Consulting Editor John Dvorak; Harry Miller, Steve Cook and Andrew Fluegelman, editors of *PC World*; Esther Dyson, president of Rosen Research, Inc.; and Richard Rabins, president of Alpha Software, Inc.

Programs scheduled include sessions on hardware and software for professionals, networking, data base management and others.

Conference and exhibit admission is $30. More information is available from Mitch Hall Associates, P.O. Box 860, Westwood, Mass. 02090.

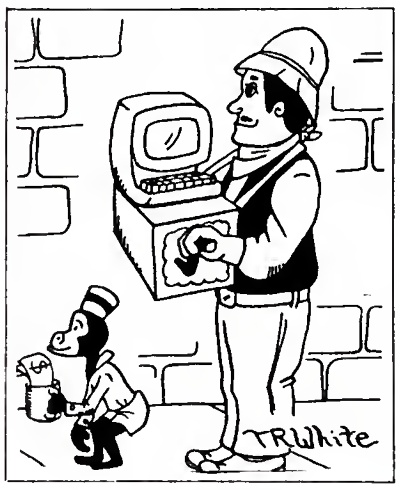
Siggraph accepting nominations

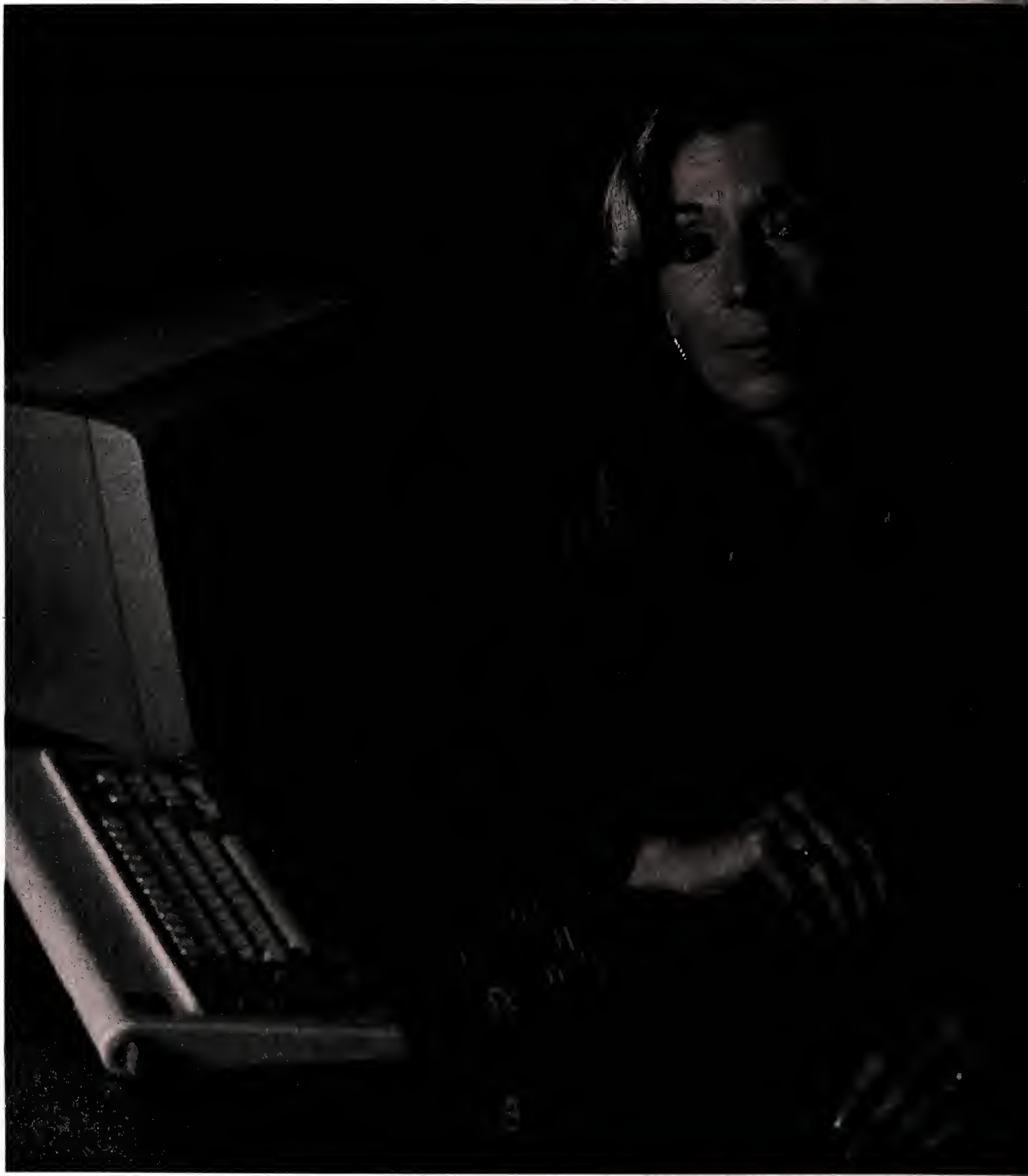
CHICAGO — The Association for Computing Machinery's Special Interest Group on Computer Graphics (Siggraph) is accepting nominations for the Computer Graphics Achievement Award, a $500 award that recognizes accomplishments in computer graphics. The award is given for development of algorithms, hardware design, innovative application of computer graphics and works of art.

Each nomination should include the name and address of the person nominated, a description of accomplishments, a statement by the nominator describing the significance of the accomplishment and the nominator's name, address and telephone number.

The award will be presented July 25 in Minneapolis during Siggraph '84, a five-day graphics conference.

Nominations can be sent to Siggraph '84 Conference Office, 111 E. Wacker Drive, Chicago, Ill. 60601.





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Symposia to cover fourth-generation tools

WAKEFIELD, Mass. — Data management and fourth-generation language products for mainframes, minicomputers and microcomputers will be the focus of the National Data Base and Fourth-Generation Language (DB&4GL) Symposia Series for 1984.

The sponsor, Digital Consulting Associates, Inc. here, announced that the series will highlight recent developments in high-level fourth-generation languages, distributed data base architectures, prototyping, relational data bases and user-oriented data base management systems.

The DB&4GL Symposia Series will be held on four occasions throughout 1984 at the following sites: Los Angeles, March 6-9; Washington, D.C., April 24-27; Chicago, May 15-18; and New York, June 18-21.

Digital Consulting Associates' President Dr. George Schussel is scheduled to lead the first day of the symposium in an intensive review of data management principles. He is also expected to speak on the topic of information centers.

The fee for the entire four-day National DB&4GL Symposia Series is $750 from Digital Consulting Associates, 339 Salem St., Wakefield, Mass. 01880.

Method/1 users group to meet

ATLANTA — The annual Method/1 Users Group Conference is scheduled at the Terrace Garden Inn here Feb. 22-24, with about 80 to 100 companies using Arthur Andersen & Co.'s project management and systems development methodology expected to participate.

Ronald L. Cullum, an associate director of Arthur Andersen's Data Management Systems, will speak on automating the work of programmers, analysts and project managers and on methodologies for using high-level, fourth-generation languages.

Registration fees are $250 for the first registrant from each firm and $150 for each additional registrant. More information is available from Arthur Andersen, 33 W. Munroe St., Chicago, Ill. 60603.

Osra to hold annual meet

LOS ANGELES — The third annual conference of the Office Systems Research Association (Osra) will be held Feb. 18-19 at the Los Angeles Hilton. The conference immediately precedes the American Federation of Information Processing Society, Inc.'s Office Automation Conference.

The Osra conference will include refereed paper sessions on technology and the office and personnel implications of office automation.

Attendance will be limited. Preregistration fees are $60 for Osra members, $85 for nonmembers. On-site registrations cost an additional $10. More information is available from Edward G. Thomas, 574 University Center, Cleveland State University, Cleveland, Ohio 44115.

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INTERNATIONAL REPORT

CW INTERNATIONAL NEWS NETWORK

CHINA

SHANGHAI — The Shanghai Software Development Center opened here this month following the establishment of a similar center in Beijing. Since so much of China's computer activity is concentrated in the two cities, it is thought that the formation of these government-funded centers will make better use of China's resources. The charter of the centers is to undertake large software development projects for both domestic and foreign users.

BEIJING — Guangdong Computer Center has developed a Unix-based operating system said to run on a variety of large and small computer systems. While retaining the basic functions and features of Unix, the software also reportedly handles Chinese, Japanese, Russian and Greek character processing.

BEIJING — The TP series of microcomputers developed by the Beijing Polytechnical University is reportedly gaining in popularity in the U.S., Sweden, New Zealand and Africa. Industrial analysts here believe exports of the domestically produced single-board machine, based on the Zilog, Inc. Z80 microprocessor, will soar once an international distribution network is established.

JAPAN

TOKYO — Japan and the U.S. have agreed to extend for three more years a 1980 arrangement that enables Japan's Nippon Telegraph and Telephone Corp. to purchase American telephone equipment, according to a Japanese Foreign Ministry spokesman.

TOKYO — Mitsubishi Corp. has unveiled a videotex system called Mapservice that serves as a "town guide" to downtown Tokyo. Two of the Mapservice machines are set up in the Roppongi Information Center. They offer the user electronic information on a number of stores, restaurants, bars and discos in Tokyo. The system also provides hard copy. Now in its testing stage with an independent memory, Mapservice is expected to be on-line in March with daily news bulletins and a file of some 300 Tokyo stores.

KOREA

SEOUL — Samsung Electronics Co. and Hewlett-Packard Co. have signed an agreement to form a company to develop computer products and to sell and support HP products here. Called Samsung-Hewlett-Packard Ltd., the joint venture will be 55% controlled by the U.S. vendor. The agreement is subject to the approval of the Korean government.

SPAIN

MADRID — Some $600 million worth of government funds is reportedly being funneled into Spain's high-technology sector to spur the domestic market. The money is intended to expand Spain's production and reduce dependence on imports, according to Industry Minister Carlos Solchaga.

WEST GERMANY

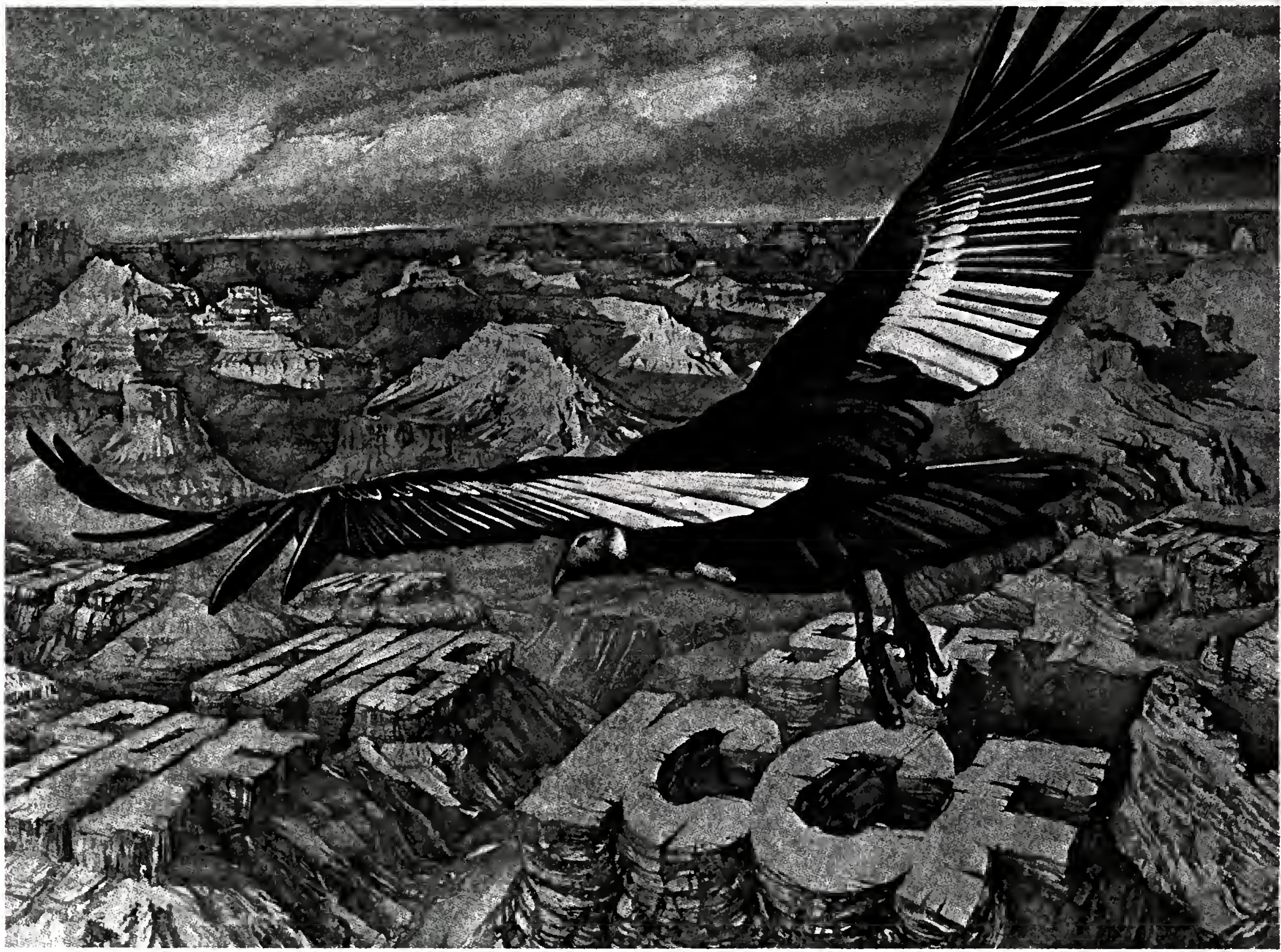
COLOGNE — Honeywell Bull AG has introduced three additions to its Series 6 product line: Model 6/210, Model 6/290 and a microcomputer desktop system called Mikro 10. The Mikro 10 is said to be IBM-compatible and capable of emulating the IBM 3270 terminal. It runs under Honeywell's proprietary Gcos operating system and also runs Digital Research, Inc.'s CP/M and Microsoft, Inc.'s MS-DOS operating systems. A basic Mikro 10 configuration with 512K bytes of main memory and two 650K-byte floppy disk drives is priced at $5,720, with first shipments slated for April.

Teleconference set for April

PHILADELPHIA — The 1984 International Teleconference Symposium, which will examine the applications, techniques and benefits of teleconferencing and ongoing developments worldwide, will be held here April 3-5 at the Marriott Hotel.

The meet is cosponsored by Communications Satellite Corp. (Comsat); AT&T; ITT World Communications, Inc.; MCI International, Inc.; RCA Global Communications, Inc.; Satellite Business Systems; and TRT Telecommunications Corp. In cooperation with Intelsat, the symposium will be linked via satellite during portions of each day with Toronto, Tokyo, London and Sydney, Australia. On the second day of the symposium, the satellite will link with all these sites simultaneously, a spokesman said.

Prior to Feb. 1, registration is $495; after Feb. 1, registration is $595 from Comsat World Systems Division, Comsat, 950 L'Enfant Plaza S.W., Washington, D.C. 20024.



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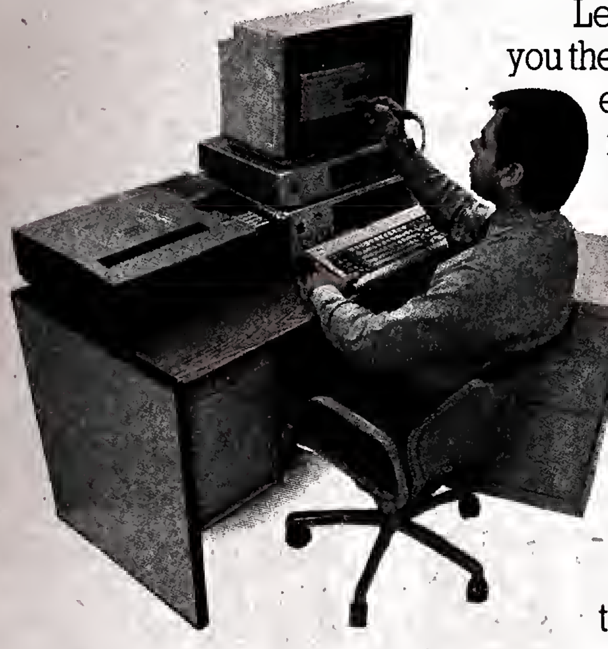

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IEEE chief laments tech education

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Declaring that American technological education "borders on a national disgrace," Dr. Richard J. Gowen, 1984 president of the Institute of Electrical and Electronics Engineers (IEEE), recently called for a national commitment to enhanced math and science education.

Gowen, vice-president and dean of engineering at the South Dakota School of Mines and Technology in Rapid City, told a press conference here that "as I look to the future, I am very concerned . . . about the technological literacy." He said schools are not adequately preparing students for a technological world and criticized what he sees as unsophisticated computer use in the classroom.

Gowen urged scientists and engineers to work with local school boards to design better math and science curricula and said there is a need to provide salary supplements for teachers in those disciplines.

The IEEE, with approximately 250,000 members in 120 countries, is in its centennial year, Gowen noted.

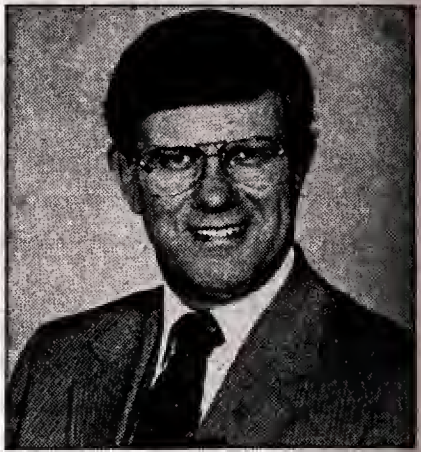
Discussing computers in the classroom, the IEEE president said, "we really haven't begun to use computers in education to their full capabilities."

Students must be prepared "so that they see a computer as you and I see a piece of paper . . . to take a computer and use it as an extension of their minds.

"The need today is for the engineers and scientists of this country to recognize the urgency of the need we have for math and science education in this country and to take action," Gowen said. Noting that the government is reluctant to initiate new programs and that bills to upgrade math and science education are stalled in Congress, Gowen urged technically trained people to become involved in local education programs.

On the national level, he called for special funds to support the education and salaries of math and science teachers. He also recommended financial support for teaching colleges. Salary supplements could keep qualified engineers and scientists from leaving schools for the private sector, he said.

Reiterating his concern that "we are falling behind [other countries] and unless we take action will fall further and further behind," Gowen described himself as optimistic that the U.S. will meet this challenge. "I believe that once we understand the problem, something will be done."



Dr. Richard J. Gowen

New edition out of IEEE guide

SILVER SPRING, Md. — The fourth edition of *Tutorial: Software Design Techniques* has been released by the Institute of Electrical and Electronics Engineers, Inc.'s (IEEE) Computer Society Press.

The fourth edition was edited by Peter Freeman of the University of California in Irvine and Peter I. Wasserman of the University of California in San Francisco.

The publication costs $20 ($32 for nonmembers) from the IEEE Computer Society, Suite 300, 1109 Spring St., Silver Spring, Md. 20910.

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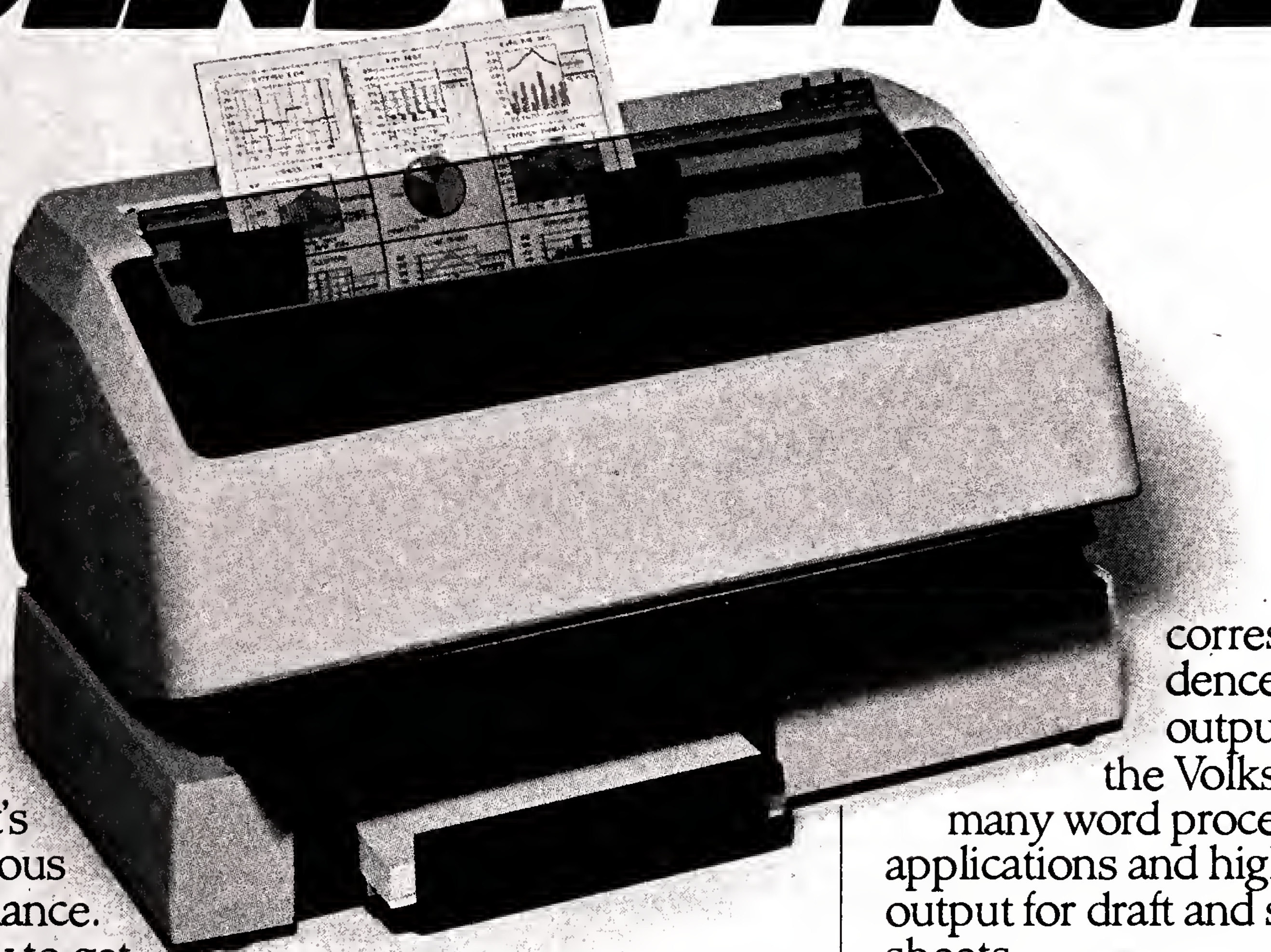

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CALENDAR

WEEK OF FEB. 12

FEBRUARY 14-17, LOS ANGELES — **Data Communications: Components, Systems and Networks.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

FEBRUARY 15, CHICAGO — **The Fourth Annual Talmis Conference: The Industry Takes Stock.** Contact: Talmis, 115 N. Oak Park Ave., Oak Park, Ill. 60301.

FEBRUARY 15, NEW YORK — **Knowledgeman for Applications.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 15-16, SALT LAKE CITY — **Intermountain Telecommunications Show.** Contact: Jon Taylor and Co., P.O. Box 356, Salt Lake City, Utah 84110.

FEBRUARY 15-17, NEW YORK — **CICS/VS Recovery/Restart.** Contact: Teltech, 39 Broadway, New York, N.Y. 10006.

FEBRUARY 15-17, ORLANDO, FLA. — **Modern Auditing Concepts.** Contact: MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

FEBRUARY 15-17, NEW YORK — **Structured Technologies in Software Testing.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

FEBRUARY 15-17, ATLANTA — **Managing Application Software Support.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

FEBRUARY 15-17, MONTEREY, CALIF. — **Small Computers.** Contact: Dataquest, Inc., 1290 Ridder Park Drive, San Jose, Calif. 95131.

FEBRUARY 16, NEW YORK — **Introduction to Dbase II.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 16-17, NEW YORK — **Computer Litigation 1984: Resolving Computer-Related Disputes and Protecting Proprietary Rights.** Contact: Practicing Law Institute, 810 7th Ave., New York, N.Y. 10019.

FEBRUARY 16-17, NASHUA, N.H. — **Corporate Problem Solving With Microcomputers.** Contact: New Hampshire College, Resource Center, 2500 N. River Road, Manchester, N.H. 03104.

FEBRUARY 16-17, SAN FRANCISCO — **Advanced Structured Techniques.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

FEBRUARY 16-17, LOS ANGELES — **Evaluation and Selection of Security Software.** Contact: Marge Cohen, MIS Training Institute, Inc., 4 Brewster Road, Framingham, Mass. 01701.

FEBRUARY 17, NEW YORK — **Executive Briefing.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

WEEK OF FEB. 19

FEBRUARY 20, WASHINGTON, D.C. — **Successful Strategies for Acquisition and Control of Microcomputers: The Revolution.** Contact: Datamation Institute, Suite 415, 850 Boylston St., Chestnut Hill, Mass. 02167.

FEBRUARY 20-21, WASHINGTON, D.C. — **Introduction to SPSS-X for New Users.** Contact: SPSS, Inc., 444 N. Michigan Ave., Chicago, Ill. 60611.

FEBRUARY 20-22, ORLANDO, FLA. — **PC Intro.** Contact: Harris Education Center, 6220 S. Orange Blossom Trail, Orlando, Fla. 32809.

FEBRUARY 20-22, LOS ANGELES — **1984 Office Automation Conference.** Contact: Trudi Riley, American Federation of Information Processing Societies, Inc., 1899 Preston White Drive, Reston, Va. 22091

FEBRUARY 20-23, SAN FRANCISCO — **The 14th Annual Conference for Computer Output Micrographics.** Contact: Computer Micrographics Technology, Suite 200, 100 N. Winchester Blvd., San Jose, Calif. 95128.

FEBRUARY 20-24, PHILADELPHIA — **Advanced C Topics Seminar.** Contact: Plum Hall, 1 Spruce Ave., Cardiff, N.J. 08232.

FEBRUARY 20-24, ORLANDO, FLA. — **IDMS-DC Programming.** Contact: Harris Education Center, 6220 S. Orange Blossom Trail, Orlando, Fla. 32809.

FEBRUARY 21, CARY, N.C. — **SAS Services Workshop.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

FEBRUARY 21, NEW YORK — **Advanced Lotus 1-2-3.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 21-22, HOUSTON — **CICS/VS Performance and Tuning.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

FEBRUARY 21-22, ORLANDO, FLA. — **Computer Negotiations Workshop.** Contact: International Computer Negotiations, Suite 1701, 200 St. Andrews Blvd., Winter Park, Fla. 32792.

FEBRUARY 21-23, SAN FRANCISCO — **Structured Analysis.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

FEBRUARY 21-23, SAN FRANCISCO — **Structured Analysis: Tools and Techniques.** Contact:

See FEB. page 41

People talk.
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We invite you to join with us in this healthy, growing market which is projected to hit $1-billion within the next ten years. And we'd like to give you a sampling of key products that are available now.

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Voice recognition is the natural, convenient, accurate way for command, control and data entry when hands and eyes are busy.

In addition, we make and market a two-device NMOS chip set that recognizes up to 200 words or short phrases with 99 + % accuracy. This VRC100-2 can be easily incorporated into any computer peripheral manufacturer's product to create an extremely user-friendly interface.

The SYS300 is a complete speech recognition system with a vocabulary of 100 words or short phrases. Just plug it in to any RS-232C ASCII terminal and start talking. Interstate provides everything you need—recognition board, power supply, enclosure, cable, and microphone—for voice the easy way.

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As more and more people talk, we'll continue to listen. And continue to support the expanding needs for voice technology by opening up new applications.

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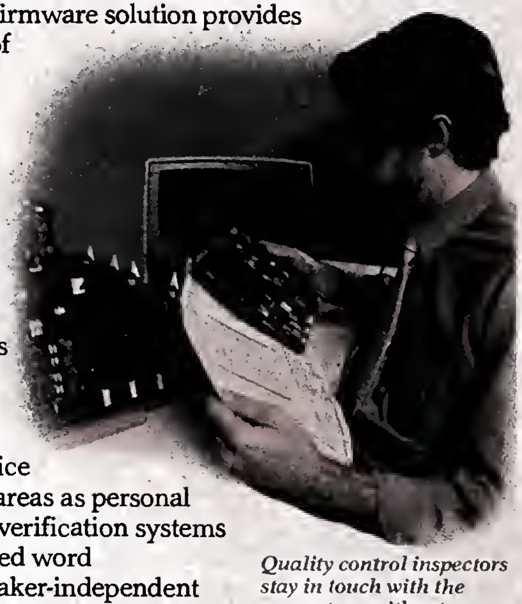

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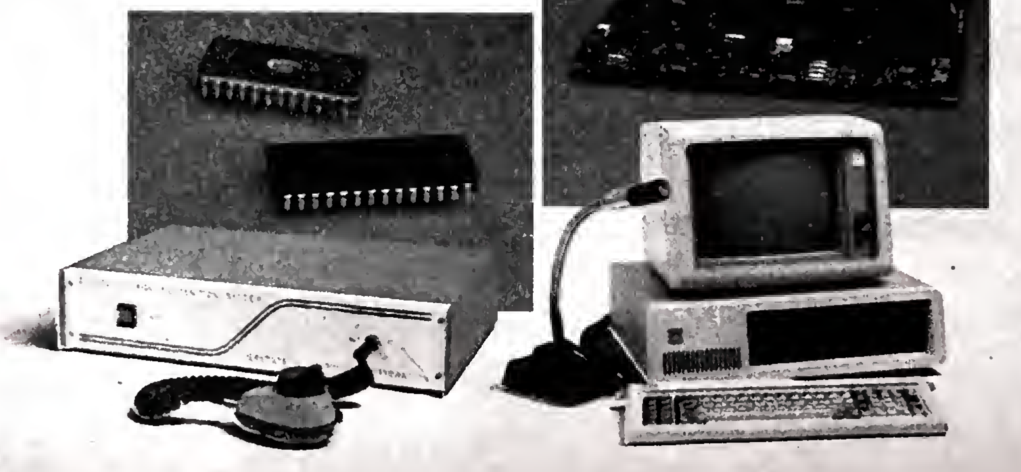

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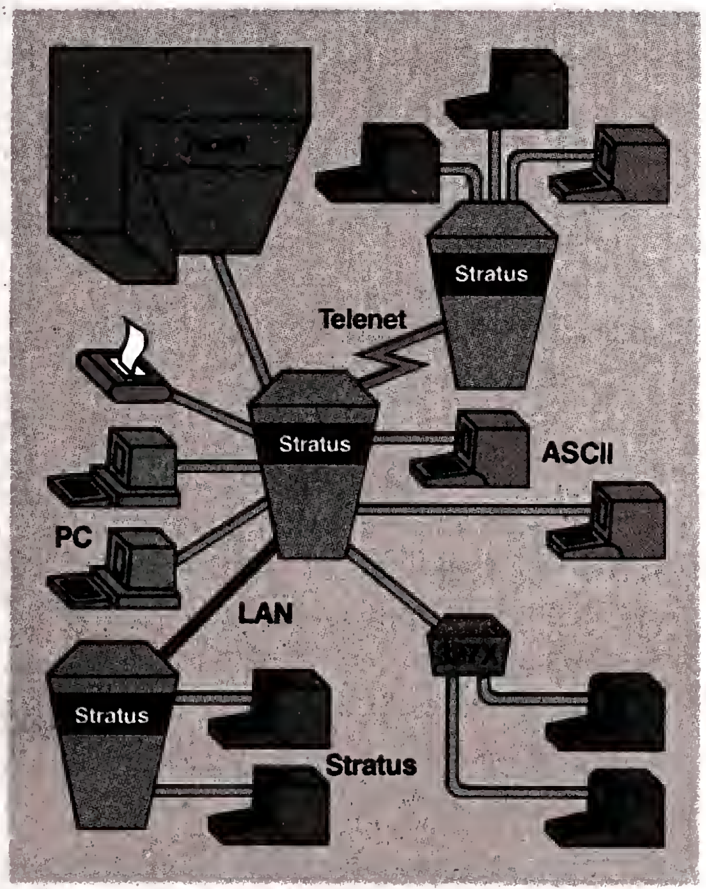

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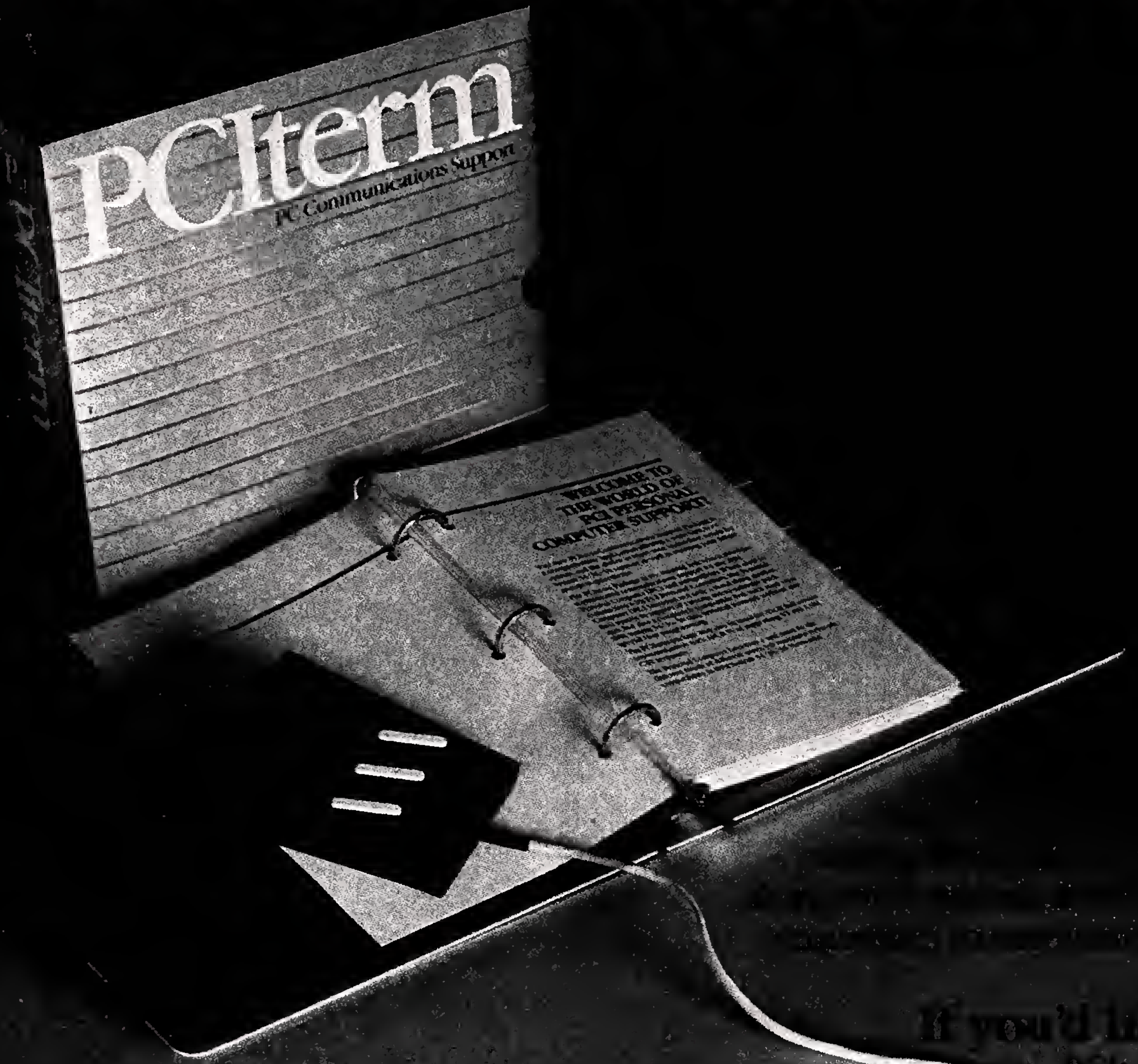
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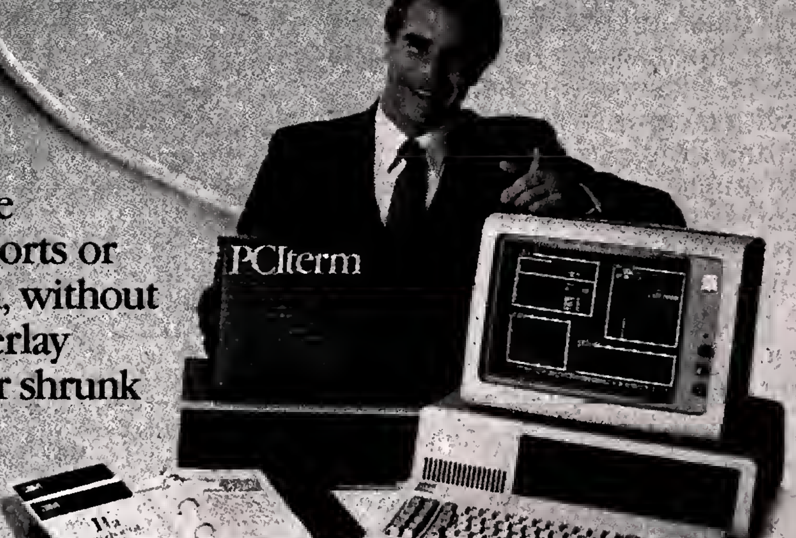

PCI PROTOCOL COMPUTERS, INC.

FEB.

from page 38

Mary Aliano, AGS Management Systems, 320 Walnut St., Philadelphia, Pa. 19106.

FEBRUARY 21-23, NEW ORLEANS — **Softcon.** Contact: Northeast Expositions, 822 Boylston St., Chestnut Hill, Mass. 02167.

FEBRUARY 21-23, CHICAGO — **Focus on Data.** Contact: Robert W. Yearick, Du Pont Statistical Seminars, Room X-40236, Wilmington, Del. 19898.

FEBRUARY 21-23, DALLAS — **Timeplex Multiplexing and T-1 Seminar.** Contact: William A. Planagan, Timeplex, Inc., 400 Chestnut Ridge Road, Woodcliff Lake, N.J. 07675.

FEBRUARY 21-23, ARLINGTON, VA. — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511. Also being held Feb. 22-24 in Cary.

FEBRUARY 21-23, NEW YORK — **CICS/VS Logic and Debugging.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Feb. 28-March 1 in New York.

FEBRUARY 21-24, WASHINGTON, D.C. — **CICS/Design.** Contact: Comped Technical Corp., 10 E. 21st St., New York, N.Y. 10010.

FEBRUARY 21-24, LONDON — **European Information Technology and Office Automation Exhibition.** Contact: British Information Services, 845 Third Ave., New York, N.Y. 10022.

FEBRUARY 21-24, FORT LEE, N.J. — **Vsam: Its Structure and How to Use it.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

FEBRUARY 21-24, LOS ANGELES — **CICS/VS Command-Level Debugging.** Contact: Teltech, 39 Broadway, New York, N.Y. 10006.

FEBRUARY 21-24, SAN FRANCISCO — **Vtam: From Start to Finish.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Feb. 21-24 in Fort Lee.

FEBRUARY 21-24, NEW YORK — **CICS Application Design.** Contact: Sysed, One Park Ave., New York, N.Y. 10016.

FEBRUARY 21-24, LOS ANGELES — **IMS/DB (DL/1) Application Programming.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

FEBRUARY 22, NEW YORK — **Dbase II Programming.** Contact: Center for Advanced Data Processing, Inc., Suite 402, 450 7th Ave., New York, N.Y. 10123.

FEBRUARY 22, NEW YORK — **CICS/VS Application Design.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Feb. 24 and Feb. 29 in New York.

FEBRUARY 22-23, WASHINGTON, D.C. — **The Institute of Electrical and Electronics Engineers (IEEE) 1984 Conference on U.S. Technology Policy.** Contact: Lisa I. Ladaw, IEEE, Inc., Suite 608, 1111 19th St. N.W., Washington, D.C. 20036.

FEBRUARY 22-24, ARLINGTON, VA. — **SAS Processing Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

FEBRUARY 22-24, RENO, NEV. — **Pick Spectrum '84.** Contact: International Data Base Management Association, Inc., Suite 210, 9740 Appaloosa Road, San Diego, Calif. 92131.

FEBRUARY 22-24, BALTIMORE — **Gateways to SNA.** Contact: Data-Tech Institute, 386 Franklin Ave., P.O. Box 569, Nutley, N.J. 07110. Also being held Feb. 29-March 1 in Boston.

FEBRUARY 22-24, NEW YORK — **Software Quality Assurance.** Contact: McCabe & Associates, Suite 111, 5501 Twin Knolls Road, Twin Knolls Professional Park, Columbia, Md. 21045.

FEBRUARY 22-24, NEW YORK — **Micro and Personal Computers: Technology and Applications.** Contact: Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

FEBRUARY 22-24, IRVING, TEXAS — **SAS Computer Performance Evaluation Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

FEBRUARY 23-24, HOUSTON — **Recovery/Restart.** Contact: On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

FEBRUARY 23-24, DENVER — **The Fourth-Generation Data Management Software.** Contact: Software Institute of America, 339 Salem St., Wakefield, Mass. 01880.

FEBRUARY 23-24, BOSTON — **Digital PABX: Architectures Networks Systems.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

FEBRUARY 23-24, ORLANDO, FLA. — **Computers in Construction.** Contact: CIP Information Services, Inc., 1105-F Spring St., Silver Spring, Md. 20910.

FEBRUARY 24, SAN FRANCISCO — **Overview of Software Engineering.** Contact: Infosci, Box 7117, Menlo Park, Calif. 94026.

WEEK OF FEB. 26

FEBRUARY 27-28, NEWARK, N.J. — **PC-DOS and the IBM Personal Computer for Mainframe Programmers.** Contact: Solutions, Inc., P.O. Box 989, Montpelier, Vt. 05602.

FEBRUARY 27-MARCH 1, NEW YORK — **Vsam: Structure and Programming.** Contact: Teltech, 39 Broadway, New York, N.Y. 10006.

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IBM	4331-2	.40
IBM	4341-9	.38
Magnuson	M80/30	.24

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EDITORIAL

The Seducer

Since the first of the new year:

- Teradata Corp. announced an integrated data base computer.
- IBM revamped its System/38 line.
- IBM put a Unix-like operating system on the Personal Computer.
- Digital Equipment Corp. put a Unix-like operating system on the VAX-11 supermini.
- AT&T enhanced Unix System V.
- Burroughs Corp. introduced the A 9, a new line of mid-range processors.
- Apple Computer, Inc. finally introduced the Macintosh.
- Cincom Systems, Inc. entered the decision support system market.

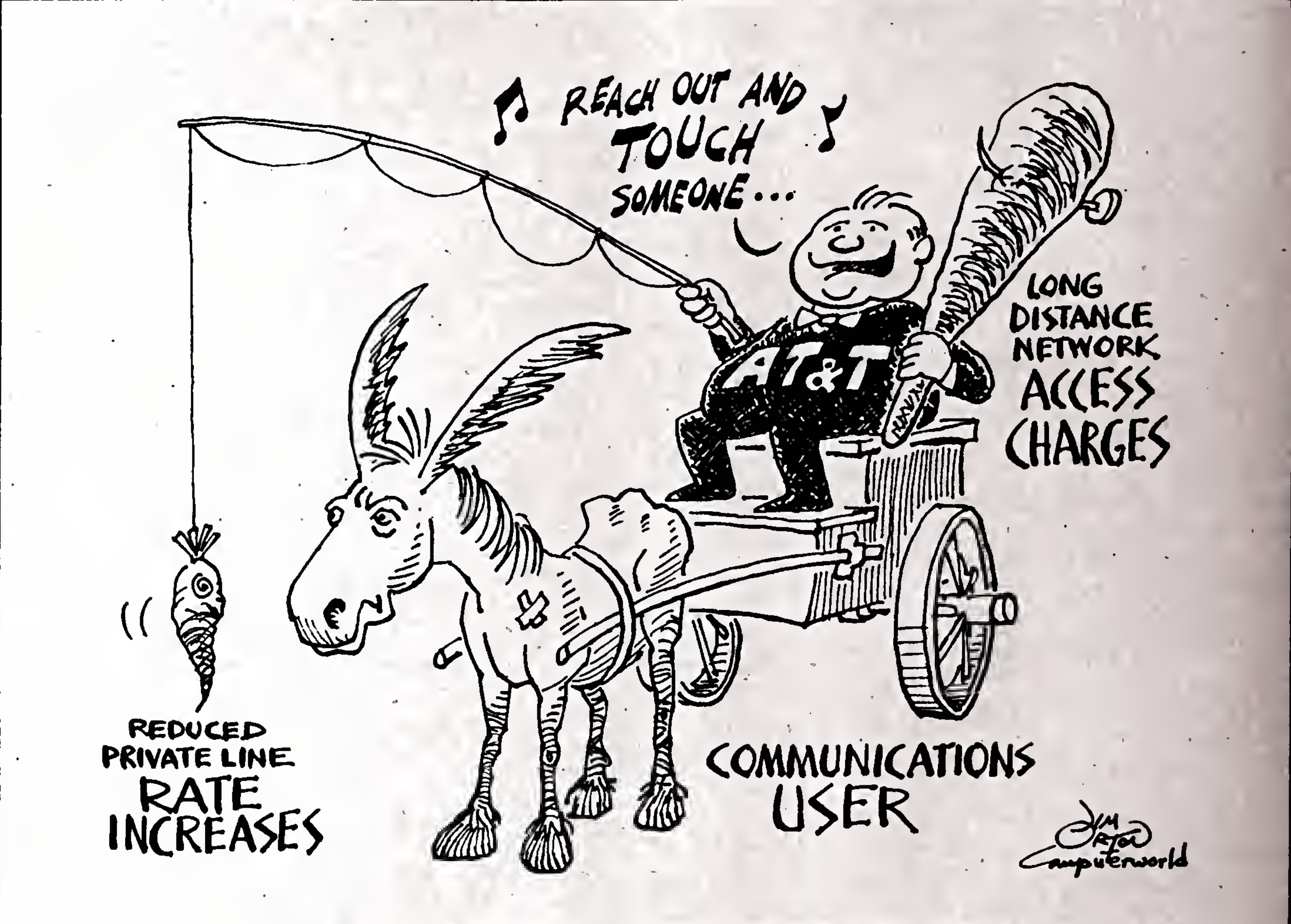
Those are just some of the significant computer industry developments that management information systems executives have had to absorb since Jan. 1. And they can expect many more as the recession continues to wind down and vendors respond to the loosening of user purse strings with ever more seductive displays of technology.

With this sort of temptation, it's understandable that the day-to-day reality of just getting the job done looks dull, especially in the middle of a long winter. It's hard to concentrate on the work at hand — implementing a new but predictable payroll package, updating a claims processing system, ironing out some problems in a receivables program — when tomorrow promises alluring technology.

But it's exactly that unrelenting, day-to-day reality that made us take notice of the results of a survey recently conducted for Robert Half International, Inc. The Half survey found that when data processing managers hire, they look for candidates with technical experience. After those candidates are hired, however, it is "personal attributes" — logic, receptiveness and communication skills — that become critical if they want to advance [CW, Jan. 23].

So we come thudding back to reality. We're reminded that it is the solution, not the machine — no matter how seductive — that is important. And it is the DPer who can explain that solution — not just code it — who will make the biggest mark on his user community.

The message? The coming year is certain to tantalize us with many technological enticements. But let's not be too dazzled by them. We've got a job to do.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LETTERS TO THE EDITOR

Another case for Mumps: running business operations

I was very pleased to see Casimiro Alonso's In Depth article "A case for Mumps" [CW, Jan. 9].

Mumps has, for years, suffered from a bad reputation. Many programmers view it as some sort of specialized language that can be used only in medical applications. As Alonso's article demonstrates, this lack of understanding is their loss.

We use Mumps to run all the business operations of our company. This includes order entry and inventory control, accounts receivable, general ledger and accounts payable, payroll, programming management, electronic mail and character and graphics generation through a VP-1 from Chyron Corp. We have one Digital Equipment Corp. PDP-11 at each of our three stations and another for our corporate headquarters. Response time is less than 1 sec, and our file storage efficiency is excellent.

I realize I am biased, but given the productivity and power, as demonstrated in the article, could *Computerworld* do more articles on this overlooked, but very useful, language?

W. Lowell Putnam
Director, systems development
Springfield Television
Springfield, Mass.

View of key decision maker ignores other DP heads

Charan S. Lohara's article, "Communications manager to emerge from automation" [CW Jan. 9], was extremely biased and not carefully thought out.

The communications manager is certainly an important individual in the corporate structure; however, to indicate that he should be the "key decision maker in a company's information management process" is shortsighted, to say the least. Lohara completely ignores the data processing manager, who handles the mainframe activities, and the department heads, who handle their own office automation equipment. These individuals are also decision makers in their own right.

The key decision maker should be the individual who is appointed to integrate and direct the functions of the three groups: data processing, office automation and telecommunications. Effective coordination should be his main goal. He may be able to obtain some cost savings from elimination of duplicate facilities, better scheduling and use of equipment, standardization of services to all departments and tighter management controls.

I'm disappointed that Lohara doesn't understand this new technologies concept.

Patrick T. LaBarber
Telecommunications consultant
Midlothian, Va.

Computerworld welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or less; they may be edited for the purposes of clarity and brevity. Letters should be addressed to Editor, Computerworld, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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CW 138

VIEWPOINT

Fourth-generation languages in client areas

THE DATA CENTER

JOHN P. MURRAY

The installation and effective operation of a sound data base management system (DBMS) can, if the DBMS provides a strong fourth-generation programming language, produce dramatic results in areas outside the management information services department. There is simply not any question, provided management information services handles the issue competently, that such a programming language will be both well received and heavily used by the client areas.

> *'If the DBMS does, indeed, provide a good fourth-generation programming language (and some do not), every effort should be made to move as much of the programming, and later on, system design function, as possible to the client areas. This process has to be planned, it has to be managed and, most important, it has to be supported by management information services. If those criteria are followed, solid results can be obtained for all concerned.'*

The result of such an effort can take at least some of the more immediate pressure off management information services, can increase client productivity and, perhaps most important, provides management information services clients with improved understanding of the management information services function and causes those clients to develop greater empathy for the function of information processing. There is nothing like having to do the job yourself to improve your understanding of the problems it presents.

Many installations go to great difficulties and considerable expense to install and operate a DBMS and then, for a variety of reasons, fail to reap many of the benefits of that system because the installation's management is unwilling to accept a reasonable amount of risk and to put forth a reasonable amount of effort to bring the benefits of the DBMS to the management information services clients. Such a circumstance is unfortunate. While much can be realized through even the restricted use of the DBMS, there are substantial benefits to be realized in the client areas if an aggressive effort is pursued to push that use out to those areas.

When I discuss this issue of increased client use of the fourth-generation languages with people in other management information services departments, I hear any number of reasons (none of which in my view is valid) why they are unwilling to expand the programming language to the client areas. The arguments range from "too heavy a use of the system resource" to "loss of management information services control" to "an unwillingness on the part of the clients to learn how to use the language."

The right reason

I suspect that often the real reason has as much to do with management information services being fearful of relinquishing some of its areas of control and power as it has to do with any other reason. After all, if anyone with rather limited experience can write a program and obtain answers to their questions, what happens to management information services.

Regardless of personal concerns, if the DBMS does, indeed, provide a good fourth-generation programming language (and some do not), every effort should be made to move as much of the programming, and later on, system design function, as possible to the client areas. This process has to be planned, it has to be managed and, most important, it has to be supported by management information services. If those criteria are followed, solid results can be obtained for all concerned.

Of course there are inherent risks in such a process. The political considerations must be faced and handled. Hardware utilization will increase — the more being done, the more resource required — but much of this issue can be addressed through processing scheduling and system structure.

When the DBMS is in operation and the environment has stabilized, the next step is to begin an aggressive effort on the part of management information services to train clients in the use of the fourth-generation programming language. The goal here, which should be announced at the onset, should be to build an environment in which the clients can write and run their own programs and where, in time, they can accept increasing responsibility for the design and development of their own systems.

This training should be carried on by management information services on a formal basis. Training classes should be scheduled on a regular basis. These classes should be structured so that as clients obtain the basic programming skills, they can move to more advanced levels. The training should be followed up in order to determine its effectiveness and the degree to which those who have taken the training are using it to gain increased control of their particular areas.

Also, this training follow-up can be used to determine what changes should be made in the training program.

Opportunities to management

The ease of use of the good fourth-generation programming languages, combined with their effectiveness, present opportunities to management information services to begin to leverage the uses, and the ultimate benefits, of the technology to the organization at large.

Seeing the effort to provide expanded use of the fourth-generation languages through is, indeed, a time-consuming and often frustrating task for the management information services department. This is particularly the case in the typical management information services departments that already have more to do than they can handle; yet the results, if appropriately handled, outweigh the difficulties.

There are installations that have done a good job in this area. Anyone who has reservations about the effectiveness of such a program and its value to an organization should locate such an installation to find out how the job has been done. Our world is changing rapidly; if we do not remain ahead of our management information services clients, they will move ahead without us. We have a responsibility to make sure that what is being done is being done correctly. We may lose some of our control and authority as the technology improves, yet we still have the responsibility. We need to accept that responsibility.

Murray is director of management information services for Rayovac Corp., Madison, Wis., and author of Management Information Systems as a Corporate Resource, *published by Dow Jones-Irwin.* ‡

Where are the knowledgeable micro retailers?

HUMAN CONNECTION

JACK STONE

I'm willing to put aside, for the moment, my frustration, anxiety, depression and irritation with personal computer retailers to state that my preference is to work with the independents — those not directly owned, affiliated with the large chains or manufacturers — because the salesmen usually don't attempt to hide their ignorance. I laud these folks for their candor when they state, "I just can't keep up with every last detail on every machine we merchandize" even though many of them have no idea about what's involved with a machine system. The people I really fault are the managers who cannot produce even one representative in their outlets who has an operating knowledge of each machine on display, especially those in which I am personally interested.

If you haven't gone on the personal computer circuit lately, you have a big treat in store for you. The level of computer knowledge is so frighteningly shallow in most retail businesses that one is given to wonder why the majority of machines sold to new users aren't returned within the warranty period for "lack of performance," a nonbellicose expression that stands for "lack of use or understanding."

Nonconfiscatable machine

Take the case of my search for a nonconfiscatable machine, that is, one with a low profile, to take on my writing trips out of the country. After going round and round for weeks with the vendors, I finally decided the small lap type was the ticket simply because of its small body print, low weight and its price of $800. Its carryability is, far and away, the major feature since raw computer power, software support and LCD screen are shockingly limited when compared with the desktop machines at that price.

My systems strategy was this: I would type draft material into the machine while back-seating on the motor tour and dump random-access memory (RAM) onto a conventional tape cassette when its capacity is reached, about 10 double-spaced typewritten pages. Upon return, I would read the tapes directly into my Processor Technology Sol 20 "host" computer and transfer the files to disk. (I don't have the communicating software in my host).

Having evaluated demos of offerings from Tandy Corp., Epson America, Inc. and NEC Information Systems, Inc. at retail stores, I settled on the NEC because of its vast RAM — all of 16K bytes compared with Tandy's 8K bytes — and its huge display — all of 40 by 8 char., about twice that of the Epson. Naturally, before I purchased the machine, I wanted to validate that both the NEC and my host would read and write the same tapes.

After searching high and low in Washington, D.C., for dealers, I found only two. The salesman at the first store claimed that although he was heavily experienced in large mainframes, he was a little short of experience on the NEC.

The salesman at the second outlet — his colleagues identify him as the one who "really knows the machine" — wasn't much better, except that he was determined to solve the puzzle and took the machine and my tape recorder with him on a weekend retreat to resolve the matter.

Sensing that I was staring at a pending loss of an $800 investment, I exercised my right as a customer to drop out of the lap market and found a low-cost, guaranteed nonconfiscatable equivalent with a far better price: a spiral notebook and three ball-point pens. ‡

Electronic Peace Corps — an info exchange

READER'S PLATFORM

DAVID H. ROTHMAN

In a Boston suburb, an engineer earning $50,000 a year spends countless hours twiddling with his new IBM Personal Computer. The technology engrosses him, but he lacks a sense of purpose. In Southeast Asia, meanwhile, a young man is wrestling with calculations needed to build a hydroelectric dam. He thinks his figures are correct, but isn't certain, and thousands of people will die if the dam collapses.

Can the Massachusetts engineer somehow help his counterpart abroad?

There is a way, if politicians will for once appeal to the better instincts of technicians. An Electronic Peace Corps could bring the two people together and offer the Third World some of the best American technical expertise via computer networks.

Until recently, the idea would have been laughable. Computer terminals cost several thousand dollars each, and special lines to Asia all went for hundreds of dollars or more an hour. But now a lap-size computer from Radio Shack sells for around $1,000 in a version practical for short reports and electronic spreadsheets.

Much better, cheaper, simpler portables are on the way. What's more, thanks to satellites, international communications costs are plummeting to a fraction of earlier levels. MCI Communications Corp. has just started an electronic mail service with letters costing only $1 for about 1,000 words; and the service, although domestic, illustrates the decline in computer network prices.

Even today, a home computer user can send a four-page message over regular phone lines to an underdeveloped country in Asia for less than $20. Special computer lines and the right equipment could push the cost below $5.

So an Electronic Peace Corps wouldn't threaten the taxpayers. By exporting knowledge instead of people, it would give us more for our money.

Computer files

The U.S. government might keep computer files listing:

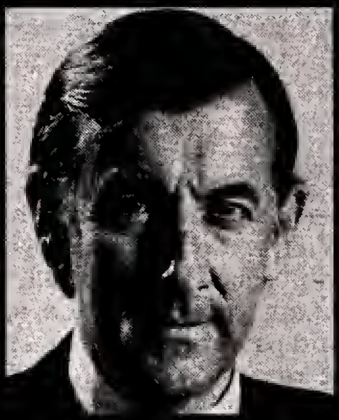
- ■ Exact skills required in underdeveloped countries and teachable through computer links.
- ■ People in underdeveloped countries who needed those skills and asked for Electronic Peace Corps help. Contrary to rumor, you don't have to be American or Japanese to benefit by way of computers. Even the mainland Chinese are building IBM-compatible micros for applications ranging from agriculture to water-power projects.
- ■ American computer users, volunteers, who could teach Third World professionals via the networks.

Already an English teacher in Colorado has tutored students as far away as Australia via Source Telecomputing Corp.'s The Source, an electronic information service, and schools in the U.S. are going on-line. And there's no reason the Electronic Peace Corps couldn't use the same techniques Peace Corps-fashion. An expert in the U.S. might regularly correspond by computer with his less experienced counterpart abroad. Swapping complicated technical data, this could receive written answers either instantly or within a day. The Electronic Peace Corps' E-Mail could overcome time differences. The Massachusetts engineer could tap out his advice at night; his counterpart in Asia could read it during normal business hours.

Obviously, the Electronic Peace Corps wouldn't replace any Americans in the field; indeed it would help to install equipment and offer enough tutoring to get the communications links going.

Nor would the Electronic Peace Corps aid people directly at the village level. It would be elite-to-elite assistance, with the welfare of the nonelite mattering in the end, and its beneficiaries would write and read English or have access to translators. They would be a few, carefully chosen people, such as the young dam builder or:

- ■ A public health administrator who wants to computerize his records so his people can spend more time in the field and less time being bureaucrats. Corpsmen might write programs specifically for that purpose. Also, the Electronic Peace Corps might contract with commercial firms to allow adaptation of existing software to Third World situations. Some programs might arrive by satellite.
- ■ A doctor who wants to check diagnoses and determine drug dosages.
- ■ A veterinarian baffled by an epidemic that is killing thousands of cattle in an already-impoverished area.
- ■ A government administrator trying to establish a more efficient food distribution network.
- ■ A civil engineer working on a



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In many countries, the Electronic Peace Corps might concentrate on communications at first for obvious reasons. Even nations with primitive phone systems, however, can already accommodate some use of computers for international communications.

With communications links established, some Third World computer students, and perhaps others, could tap into Electronic Peace Corps-sponsored data banks at American universities. Electronic mail tutors could guide them through the electronic maze. The Electronic Peace Corps' emphasis, of course, wouldn't just be on solution of immediate problems, but also on instruction. The goal would be the same as the traditional Peace Corps: to promote self-sufficiency. In the future, Third World countries might still use American computer banks for technical data, but now they wouldn't need guides. In some cases, in fact, Third World technical people would make contributions of their own to the data bases without leaving their countries.

Instruction in culture

Lest the Ugly American be transported abroad electronically, the Electronic Peace Corps corpsmen would receive instruction in cultural differences and general information about the country they were helping. They might attend special training sessions for several weeks. Then, having demonstrated their commitment, they would work for the Electronic Peace Corps from their homes at nights and on weekends.

Also to reduce costs and the chance of misunderstandings, corpsmen and the people abroad might use written communications rather than voice most of the time. They might start out exchanging questions and answers within strict formats. Eventually, the contacts between the volunteers and the people in the Third World might turn informal.

The Electronic Peace Corps, moreover, would offer other benefits. It would encourage computerization in underdeveloped countries. What better way to dramatize the usefulness of the technology and to glamorize the technical skills that some prestige-minded Third World universities have slighted.

Americans, too, through the Electronic Peace Corps, would come out ahead. In solving problems halfway around the globe without leaving their homes except for a few weeks, they'd gain an appreciation of the possibilities of telecommuting. That might help mitigate the effects of any future energy crisis. And mass telecommuting would also lower highway construction costs and, by reducing lengthy commutes, make life more bearable. The more people with computers, the more firms would offer telecommuting.

Also, the Electronic Peace Corps would be good news for the domestic computer industry, which would find a larger market for its products both here and abroad. Forget about the dangers of high-tech giveaways. The Electronic Peace Corps wouldn't pass on the secrets of the latest generation of mainframes. Instead, using already-common micro technology, it would help Third World professionals solve their countries' everyday problems. Remember, too, that many people in the Electronic Peace Corps wouldn't even be computer experts. They would simply be using electronic mail to pass on their technical skills to the Third World.

Yet another benefit of the Electronic Peace Corps could be a domestic offshoot. Its focus might be different. Because of lower communications costs, the domestic version might take more chances helping nonexperts without credentials. A gifted high school writer in Harlem, N.Y., might tap out short stories on a school computer; a famous author across town might zip the files back, with comments easily inserted electronically. Likewise, a Beverly Hills, Calif., executive might volunteer help to a small businesswoman in Watts.

The most urgent need for Electronic Peace Corps-style assistance, however, is now in the Third World, where, because of technical backwardness, so many are starving. An excellent pilot site for the project might be Sri Lanka. Started with strong encouragement from Sri Lanka's president, the Arthur C. Clarke Centre for Modern Technologies is studying the use of telecommunications, computers and other high tech in the Third World.

A final question remains. Would enough American techies want to serve in the Electronic Peace Corps? Volunteerism is alive and well in scores of users groups that computer owners have formed to protect themselves against the wiles of salesmen and exchange technical information. American amateur radio operators have been sharing hints with their colleagues abroad for years. And without phone costs to worry about, many computer owners might be similarly helpful.

The Electronic Peace Corps, of course, should no more replace Volunteers for International Technical Assistance than it should compete with foreign-based groups such as the Arthur C. Clarke Centre. The Third World badly needs them all. Championing the Arthur C. Clarke Centre, a Sri Lankan diplomat quoted H.G. Wells' observation that human history was becoming "a race between communications and catastrophe." And the Electronic Peace Corps, in its own small way, could help to give the former a head start. ‡

Rothman is a free-lance writer in Alexandria, Va.

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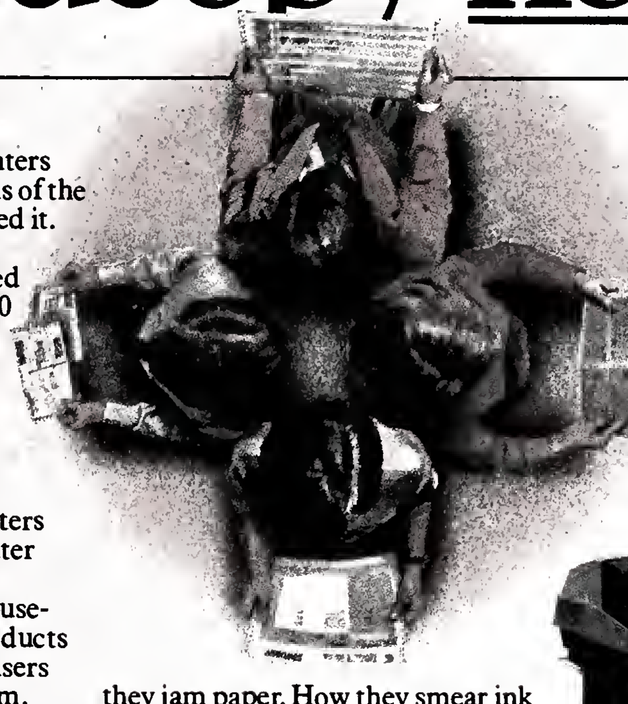

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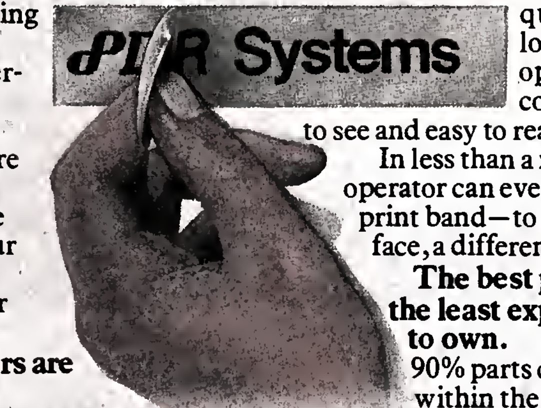

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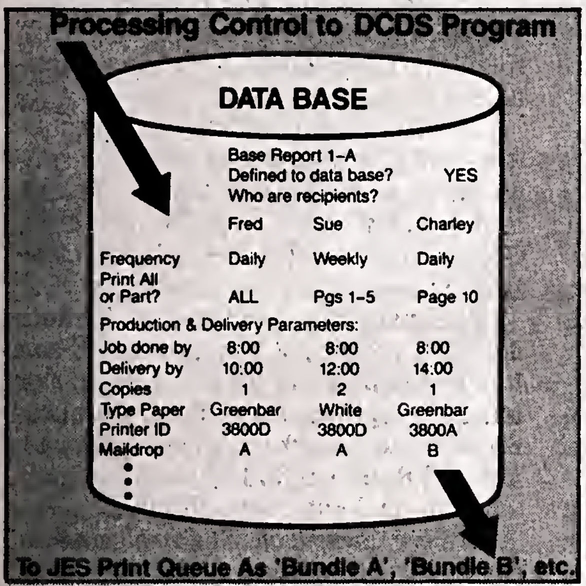
Processing Control to DCDS Program
DATA BASE
To JES Print Queue As 'Bundle A', 'Bundle B', etc.

Base Report 1-A
Defined to data base? YES
Who are recipients?

	Fred	Sue	Charley
Frequency	Daily	Weekly	Daily
Print All or Part?	ALL	Pgs 1-5	Page 10
Production & Delivery Parameters:			
Job done by	8:00	8:00	8:00
Delivery by	10:00	12:00	14:00
Copies	1	2	1
Type Paper	Greenbar	White	Greenbar
Printer ID	3800D	3800D	3800A
Maildrop	A	A	B

On-line package supports MVS

CHERRY HILL, N.J. — Value Computing, Inc. has announced an on-line software package that is said to allow IBM MVS sites to control better the format, length, routing and distribution of reports.

Called the Data Center Distribution System (DCDS), the product includes a data base that allows on-line forecasts to be generated of report production and availability. Before reports are printed out, they are matched with "customizing parameters" contained in the data base and broken up and individualized for each recipient. Parameters include paper, printer identification and delivery location. Only the Sysout DD JCL statement needs to be changed, according to a spokesman.

Recipients receive only the pages of each report that are specified in the data base. All reports that are to be printed on the same printers, in the same time frame and destined for the same mail drop location are printed together in an unbroken sequence to form a bundle. The bundle contains one job with one set of job separator pages. Each bundle is delivered whole to its preassigned mail drop where distribution takes place.

DCDS prints only the parts of a report for which a recipient asks. In beta test, the product has saved the average MVS installation between five and 10 boxes of paper per day, the spokesman said.

The product can be interfaced with the company's Data Center Management System, Comput-a-Charge, Valu-Lib and SMF Express, all of which share a common data base.

DCDS is priced from $40,000 and will be available in April.

Value Computing, 498 N. Kings Highway, Cherry Hill, N.J. 08034.

AT&T keynoter lauds Unix

Porting capability called revolution

By John Gallant
CW Staff

WASHINGTON, D.C. — Calling it one of the most important revolutions in the computer industry for the 1980s, a top executive of AT&T said the Unix operating system will "finally end the long tyranny of hardware" through its unique porting capabilities.

During his keynote address at the recent Uniforum International Conference of Unix Users here, Jack Scanlon, vice-president of computer systems for AT&T, said the expanding acceptance of Unix as an industry-standard operating system — in commercial applications as well as in its traditional role in scientific and engineering environments — will allow users to marry hardware and software in the system most applicable to their needs. "Unix has moved from an interesting research tool to a major force in the industry," Scanlon said.

Scanlon labeled IBM's foray into the Unix market with its PC/IX operating system as a positive step toward wider acceptance. He also maintained that Unix has become a "significant force within the government," having been utilized by the Departments of Defense, Energy and Commerce. In addition, Unix is gaining favor in several other agencies, including Agriculture, Transportation, Health and Human Services and the Interior, he said.

Scanlon said that he expects the total number of Unix installations to triple in 1984 and that revenues from Unix products sales and support will increase by a factor of five to more than $8 billion by 1986. He added that attendance at the Uniforum conference, which was expected to draw more than 8,000 visitors, was a sign of the increasing acceptance of and commercial interest in the operating system.

"Over 90% of our computer science graduates have had experience in using Unix," Scanlon said. "They have recognized the importance of the system's incredible versatility and its portability across a wide range of processors. All of these factors have increased the acceptance of Unix. What we are witnessing is a natural evolution of Unix into the commercial world."

The AT&T executive said a major problem in promoting Unix has been the lack of an industrywide standard. Scanlon said AT&T is working to overcome that obstacle by providing application packages and support for System V, which the industry giant has touted as the new Unix standard since licensing began last year. "We initially developed System V to maximize the synergy of our own programming staff. This system has withstood the test of one of the toughest agencies in the world, namely, AT&T," he said.

According to Scanlon, Unix represents a "classic match" between emerging market needs and advancing technology. Unix's porting and multitasking capabilities, he added, are crucial to the future proliferation of all levels of processors. "The software transparency between machines provided by Unix is critical. This system plays well on a whole range of hardware, allowing the networking of diverse capabilities," Scanlon said.

Unix also has proved a boon to indepen-

See **UNIX** page 50

ADR/Roscoe release backs IBM OS

PRINCETON, N.J. — Applied Data Research, Inc. has announced Release 5.3 of its ADR/Roscoe on-line programming system for IBM OS environments.

According to the company, enhancements include more flexible communications support, reduced terminal transmission for faster response times on remote terminals, an expanded and more efficient editing work area and an interactive user profiling system with new library security.

It also is said to feature IBM 3279 color graphics support for ADR's extended time-sharing option (Etso), designed to let users execute applications in an interactive environment, the company said.

The enhanced version also features new structured programming constructs and enhanced memory management in the Roscoe programming facility, new system interface support and a message-switching facility, ADR said.

Permanent license prices for Roscoe are $49,700 for IBM MVS sites and $42,400 for non-MVS sites.

The permanent license price for Etso is $14,000.

Leases are also available, the vendor said.

ADR, CN-8, Rt. 206 & Orchard Road, Princeton, N.J. 08540.

Lotus

Lotus 1-2-3 tied to Interactive Data Corp. network/56

INSIDE

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- Wang users get spreadsheet/**55**
- Project management system runs on System/38/**52**

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SYSTEMS SOFTWARE

AMALGAMATED SOFTWARE OF NORTH AMERICA, INC.
Acceler8

Amalgamated Software of North America, Inc. has introduced Release 2 of its disk management system for the IBM System/34.

The product, Acceler8, speeds disk accesses and reduces the need for key sorts and overflow indexes, the vendor said.

Two new procedures, Savefile and Rstrfile allow users of Acceler8 to save and restore the index portion of a file along with the data, the vendor said.

In addition, the System/34's speed of random access is increased, while the amount of required storage is reduced with Acceler8.

The system can be leased for $150/mo per installation or purchased for a one-time license fee of $3,300.

Amalgamated Software of North America, P.O. Box 1068, Malibu, Calif. 90265.

BRITZ PUBLISHING, INC.
Quicklib

Britz Publishing, Inc. has announced Quicklib, a library of public domain software for the IBM System/34 and 36 series computers.

The initial selection, consisting of approximately 50 entries, includes operator and programmer utilities, such as programs to change uppercase letters to lowercase letters, duplicate data files, index files and change record lengths or file sizes, according to the vendor.

The software was written by Britz Publishing personnel, and the company is soliciting public domain software from other sources for inclusion in the Britz library. Anyone who sends software that is accepted in the library will receive a free copy of the public domain software, the vendor said.

A copy of the public domain software is available for $10 from the publisher.

Britz Publishing, 1814 Capital Towers, Jackson, Miss. 39201.

UNIX

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dent software developers, Scanlon said, allowing them to offer their products in a greatly expanded market. More important, he added, acceptance of Unix means the elusive goal of programmer productivity may finally be within reach. "Programmer productivity will gear up at last," Scanlon said. "We will also be able to end the wasted effort of rewriting applications for new hardware or operating system environments. That means a savings of 20% to 50% of each programmer's time."

What's more, Unix will foster a "renaissance in computer architecture," Scanlon said. "Systems designers have been hamstrung for 20 years. Designers were only allowed to replicate old architecture because marketing insisted that the new system run the old software. It was a case of throwing new technology at old architecture. Unix has begun to change all that, allowing designers to utilize the system's high-level language and compilers."

DATANEX, INC.
General-purpose workstation package

Datanex, Inc. announced that its general-purpose workstation software, which uses the Hasp communications protocol, now supports Digital Equipment Corp.'s DMF 32 and DPV11 communications boards.

The package allows DEC's PDP-11 and VAX-11 minicomputers to communicate with other computers and networks, such as IBM mainframes and Control Data Corp.'s Cybernet networks, the vendor claimed.

Transmission speeds range from 2K bit/sec to 56K bit/sec, according to the vendor.

A single CPU license for VAX-11 systems is priced at $5,500. For PDP-11 systems, a single CPU source-code license ranges from $1,995 to $5,000, the vendor said.

An annual support and upgrade fee is priced at 15% of the purchase price.

Datanex, P.O. Box 1728, Eugene, Ore. 97440.

MASSCOMP; CREARE RESEARCH & DEVELOPMENT, INC.
Mc/link; Mc/hasp

Masscomp has announced a joint development venture with Creare Research & Development, Inc. of Hanover, N.H., for two software programs for Masscomp's MC-500 and Workstation 500 32-bit computer system under the Unix operating system.

Mc/link provides a communications facility between Masscomp systems and Digital Equipment Corp.'s VAX-11 series minicomputer running under DEC's VMS operating system.

The Mc/link program provides up to 63 virtual communications channels.

The Mc/hasp package is said to allow both Masscomp systems a complete batch job preparation and entry and postprocessing system for IBM, Control Data Corp. and other mainframe computers, the vendor said.

The package emulates a Remote Job Entry (RJE) station, and RJE can be accomplished over dial-up or leased telephone lines using synchronous modems, which typically operate at 4,800 or 9,600 bit/sec.

Each package costs $5,000.

Creare Research & Development, Great Hollow Road, P.O. Box 71, Hanover, N.H. 03755.

Some of the best names in software are quite attached to our network.

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— David Clayton Cole, Chairman, Ashton-Tate (Culver City, California)

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— Mitch Kapor, President, Lotus Development (Cambridge, Massachusetts)

"We wanted network software transparency. Our PFS:® software runs without ANY change on 3Com's EtherSeries™— it protects our user's software investment."
— Fred Gibbons, President, Software Publishing (Mountain View, California)

"The Ethernet standard and 3Com's EtherSeries™ will be an important part of our in-house networking strategy. It provides the connectivity we require for our growing organization."
— Bob Frankston, President, Software Arts (Wellesley, Massachusetts)

"Our mainframe link software and Peachtree software ran perfectly in the 3Com environment. We dropped

PRODUCTIVITY AIDS

M. BRYCE & ASSOCIATES, INC.

Interface to Pride Automated Systems Design Methodology

M. Bryce & Associates, Inc. has announced an interface package for its Pride Automated Systems Design Methodology (ASDM) and Software House, Inc.'s System-1022 Data Base Management System (DBMS) software.

According to the vendor, the interface uses the logical data base design specifications generated from Pride ASDM to produce automatically the necessary physical file statements for System-1022. The bridge is said to be a productivity aid for users of the two products.

Pride ASDM is described as an integrated and automated approach for engineering and manufacturing information systems. System-1022 is described as a DBMS operating on the Digital Equipment Corp. Decsystem-10 and Decsystem-20 mainframes.

The interface is sold as a $7,000 option to Pride ASDM, which is priced at $80,000.

M. Bryce & Associates, 1248 Springfield Pike, Cincinnati, Ohio 45215.

IMSL, INC.

IMSL Library Edition 9.1

IMSL, Inc. has announced that its IMSL Library of mathematical applications is now available for use with the Gould, Inc. Concept/32 superminicomputer.

According to a vendor spokesman, the IMSL Library contains 540 Fortran subroutines for a broad range of mathematical and statistical applications.

The software was designed to reduce the time and cost involved in developing application programs by allowing the programmer to select complete, fully tested subroutines from the library rather than writing them.

Dubbed Edition 9.1, the IMSL Library system is compatible with Concept/32 superminis using the Fortran 77+ compiler.

The spokesman said the library is useful in applications such as simulation, oil and gas exploration, communications, engineering and research and development.

A one-year license for the IMSL Library is priced at $2,500 or $1,700 for universities and colleges, the vendor said.

IMSL, NBC Building, 7500 Bellaire Blvd., Houston, Texas 77036.

APPLICATION PACKAGES

INTEGRATED SOFTWARE SYSTEMS CORP.

Configurator 8

Integrated Software Systems Corp. (Issco) recently announced expanded output device capabilities for its interface to its computer graphics software packages, Disspla and Tell-a-graf.

Additional devices supported by Configurator 8, the eighth release in a series of software device interface libraries, reportedly include the entire Seiko Instruments USA, Inc. D-Scan terminal family; Digital Engineering Corp.'s Gen II graphics retrofit board; the Benson, Inc. 9000 series electrostatic plotters; two C. Itoh Electronics, Inc. graphics terminals and Datagraph VTC 8001; and Jupiter Systems, Inc.'s Jupiter 7 and Modgraph GX 100 terminals.

A company spokesman said Issco's software packages run on popular mainframes and minicomputers from Apollo Computer, Inc., Burroughs Corp., Control Data Corp., Cray Research, Inc., Digital Equipment Corp., Hewlett-Packard Co., Honeywell, Inc., IBM, Perkin-Elmer Corp., Prime Computer, Inc. and Sperry Corp.

The announced release will be provided at no charge to existing customers. Disspla is priced from $9,500 to $61,000; Tell-a-graf is priced from $9,500 to $52,000.

Issco, 10505 Sorrento Valley Road, San Diego, Calif. 92121.

GARY BROWN ASSOCIATES, INC.

Fams/OL

Gary Brown Associates, Inc. has announced the Fixed Assets Management System/On-Line (Fams/OL) for the IBM System/36, which is said to utilize that hardware's ability to track data through variable access paths.

Fams/OL offers users an automated tool for complete asset accounting and property reporting and is easy to use, the vendor claimed. It is also available for the IBM System/34.

The system features extensive asset data designed to give the user a single source of reference control and analysis and management for assets, the vendor said.

Other features include the ability to parallel three modes of depreciation per asset, a choice of nine depreciation methods, 16 optional reports and the ability to handle multiple companies and divisions.

A complete On-Line Tax Reference Guide is provided, and data is said to be edited on-line for syntax and compliance with established tax regulations.

The system profile is easily modified to establish summarization levels and reporting control, the vendor said.

The Fams/OL package is priced at $3,200.

Gary Brown Associates, 322-B Edwardia Drive, Greensboro, N.C. 27409.

See **TOOLS** page 52

Bill Gates Microsoft
David Clayton Cole Ashton-Tate
Fred Gibbons Software Publishing Corp.
Bob Frankston Software Arts

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— Dennis Vohs, Executive Vice President, MSA (Atlanta, Georgia)

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— Dan Fylstra, Chairman, VisiCorp (San Jose, California)

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TOOLS

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INFORMATICS GENERAL CORP.

Claim Receiver

Informatics General Corp. has announced a software product designed to speed movement of medical claims information from the National Electronic Information Corp. (Neic) clearinghouse to insurance companies.

Claim Receiver reportedly expedites claims as they are submitted to Neic by hospitals and transfers information to insurance companies that are Neic subscribers according to the UB-82 claim form recently approved by the federal government.

Claim Receiver operates in batch mode with IBM OS and DOS. It is said to feature a history file to provide a permanent audit trail and a file-control report.

The product is available at a price of $10,000.

Group Insurance Systems Sales, Informatics General, 9441 LBJ Freeway, Dallas, Texas 75243.

LEHIGH UNIVERSITY

Ecomsets; DSS/2; ODE/PDE

Lehigh University has announced three software systems for mathematical modeling, which are said to be designed for use with a variety of mainframe systems.

The systems are the Educational Computer-Based Models for Socioeconomic Technological Situations (Ecomsets) package, the Differential Systems Simulator, Version 2 (DSS/2) package and the Mathematical Software for Ordinary and Partial Differential Equations (ODE/PDE) package. A spokesman said the packages can be run on mainframes from manufacturers, including IBM; Amdahl Corp.; Burroughs Corp.; Control Data Corp.; Digital Equipment Corp.; Honeywell, Inc.; Prime Computer, Inc.; and Sperry Corp.

The spokesman said the underlying mathematics within the systems contain ordinary and/or partial differential equations, and all coding is in standard, transportable Fortran IV. All three systems are available on 9-track tape and range in size from 15,000 to 18,000 lines of Fortran IV.

The Ecomsets system is priced at $100, the DSS/2 system at $1,000 and the ODE/PDE system at $1,000.

Lehigh University, Whitaker No. 5, Bethlehem, Pa. 18015.

HEALTH INFORMATION SYSTEMS, INC.

Materials Management System

Health Information Systems, Inc. (HIS), has announced an on-line module for IBM mainframe systems that is designed for tracking inventory items used by the health care industry.

The Materials Management System reportedly is interfaced to other HIS systems, such as Accounts Payable and General Ledger. It is said to feature an English-language conversational mode with a "help" key feature and functions that include creating, editing and canceling purchase orders on-line and tracking inventory items requisitioned and dispensed to all hospital departments.

Available now, the system is priced at $45,000 as an additional module for HIS Accounts Receivable.

Health Information Systems, 4522 Hamilton, Brooklyn, N.Y. 11219.

COLLIER-JACKSON, INC.

CJ/Fixed Assets

Collier-Jackson, Inc. has announced CJ/Fixed Assets, an on-line, data base-oriented fixed assets accounting system for the Hewlett-Packard Co. HP 3000 that provides property depreciation and control for medium-size to large corporations.

At company, division and department levels, CJ/Fixed Assets is said to track property and create separate or consolidated reports. CJ/Fixed Assets is also said to allow users to define parameters to determine specific types of assets and sorting sequences for these reports.

The system can keep an unlimited number of books, the vendor said, allowing users to set up test books as well as standard accounting books.

CJ/Fixed Assets supports a variety of depreciation methods. The system automatically interfaces to CJ/Advanced General Ledger and can adapt to other automated general ledger systems. CJ/Report Writer is available as an add-on feature. The license fee is $18,000.

Collier-Jackson, 3709 Jetton Ave., Tampa, Fla. 33629.

THE FASBE GROUP, INC.

Version 3.4.6 of IBMS

The Fasbe Group, Inc. has enhanced its Interactive Business Management System (IBMS), a financial application package for Digital Equipment Corp.'s VAX-11, Decsystem-10 and Decsystem-20 computers.

The new release (Version 3.4.6) features on-line, interactive processing and increased throughput, according to the vendor. An allocation module which provides the user with fixed-amount, fixed-percentage and variable-percentage allocations in either update or nonupdate mode has been added to the general ledger subsystem.

The accounts payable system now includes multiple bank, recurring payment and one-time vendor processing capabilities. The security module provides encryption techniques for internal control, and a new report writer module uses English statements for report writing, according to the vendor.

A one-time CPU licensing fee for IBMS costs between $5,000 and $20,000.

The Fasbe Group, P.O. Box G, Nashua, N.H. 03061.

AGS MANAGEMENT SYSTEMS, INC.

PAC III

AGS Management Systems, Inc. recently announced that its Project Analysis and Control (PAC III) project management system is now available for use on the IBM System/38 running under IBM's CPF-BC operating system.

PAC III reportedly combines networking, resource scheduling, estimating and accounting functions in a single project management system that may be used by many groups within one company to provide a single standard for project management within the organization.

A company spokesman said new options for the package include management graphics in color to display schedules and budgets; network color graphics to provide a picture of network and critical activities; and an earned value option to help locate variances by comparing scheduled vs. actual performance in work effort and budget.

The package is priced from $40,000 to $56,000.

AGS Management Systems, Department MS, 320 Walnut St., Philadelphia, Pa. 19106.

SHIRLEY SOFTWARE SYSTEMS, INC.

Mister for DEC VAX-11s

Shirley Software Systems, Inc. has announced that its Management Information System for Time, Expenses and Resources (Mister) Project Management system is now available for use with Digital Equipment Corp.'s VAX-11 series of processors.

The Mister package consists of nine modules that are said to assist managers in planning, scheduling and monitoring work. The vendor said the package is useful in applications such as engineering design, construction, software development, public utilities planning, research and development and shipbuilding and repair.

Mister reportedly utilizes Critical Path Method techniques to schedule multiple projects with numerous activities per project. Network graphics are available on all standard plotters and many dot matrix printers, according to the vendor. The system reportedly offers more than 50 standard reports, and an on-line report generator feature creates customized output.

The Mister system also includes an interactive data entry module that asks users simple questions to assist in defining a schedule. The system was designed to operate on the VAX-11/730, the VAX-11/750 and the VAX-11/780 under the VMS operating system. Mister is priced

Continued on page 54

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Improved Edit.

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- ☐ Load module CSECT and directory entry mapping
- ☐ Selective COPY functions for records/members.
- ☐ New full function VTOC utility.
- ☐ Full VSAM cluster, alternate index and path support (display, delete, etc.) without the IDCAMS utility.

Ease of Use.

File-AID/SPF requires no training.

File-AID/BATCH

All Access Methods.

File-AID supports all standard IBM OS or VS access methods and device types.

Multi-Function Utility.

File-AID/BATCH is a parameter-driven utility which combines the most often used file and record handling functions.

- ☐ Print, list or dump whole records or portions of records.
- ☐ Copy up to 99 datasets without control cards while mixing any file organization or record format.

File-AID is a comprehensive, easy-to-use data manipulation utility.

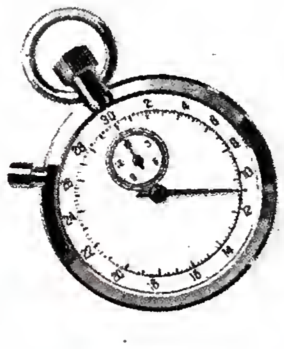
- ☐ Selective retrieval or sampling from any file based on record position, or data contents to the bit level.
- ☐ Altering data format or record structure.
- ☐ Access multiple datasets.
- ☐ Accumulate data in any format.

Additional Information.

File-AID/BATCH provides complete audit trail information as well as concise control card error messages.

Flexibility.

The flexibility of File-AID/BATCH is demonstrated by its ability to combine data from different sources or to copy data from or to unlike devices or access methods or record formats.



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Continued from page 52

between $26,000 and $78,000 depending on the number of modules selected.

Shirley Software Systems, Suite 208, 1936 Huntington Drive, South Pasadena, Calif. 91030.

DATA PROCESSING SERVICES, INC.

Distribution Processing System/38

Data Processing Services, Inc. has announced an integrated inquiry software system for distribution processing on the IBM System/38.

Distribution Processing System/38 consists of order processing, invoicing, inventory and accounts receivable programs, a spokeswoman said.

It reportedly fully integrates the inquiry system as a separate subsystem to give users ready accessibility to all levels of data. Access is gained through one "door" to save time, according to the vendor.

The system stores up to 20 inquiries for each user session, permitting review of previously selected data without reentry of selection criteria, the vendor said.

Other features include multicompany and multidivision processing, custom menus for each user and flexible pricing.

Distributed Processing System/38 pricing starts at $60,000 for a one-time license fee.

Data Processing Services, 8604 Allisonville Road, Indianapolis, Ind. 46250.

NATIONAL INFORMATION SYSTEMS, INC.

Version 4 of VUE

National Information Systems, Inc. has announced Version 4 of its VUE software, which it described as a computerized project management system.

The vendor said Version 4 features on-line Help messages, redesigned menus, a new command mode, expanded resource capabilities, a new time-schedule network and the incorporation of all processing into a single module.

VUE is said to accommodate the entering and reporting of information for planning, scheduling and tracking project activities.

The redesigned menus, Help messages and command mode reportedly combine to make the system easier to use, and the organization of the menus has been changed to improve the logical flow of information.

With the expanded resource capabilities, the user can now specify up to 100 resources for a project, as opposed to 10 resources in earlier versions, according to a spokesman for the vendor.

The time-schedule network report is said to provide bar chart information and precedence relationships of activities.

VUE runs on Digital Equipment Corp.'s VAX-11, PDP-11, Decsystem-10 and Decsystem-20, Hewlett-Packard Co.'s HP 3000, most Honeywell, Inc. computers and all Perkin-Elmer Corp. processors, according to the vendor.

It is priced between $5,000 and $22,500, depending on the operating environment and the options chosen, according to the vendor spokesman.

National Information Systems, 20370 Town Center Lane, Cupertino, Calif. 90514.

COMMUNICATIONS ANALYSIS CORP.

Moste

Communications Analysis Corp. has announced that its Management of System Telephone Expenses (Moste) system is now available for Digital Equipment Corp.'s VAX-11 series of superminicomputers and PDP-11 series of minicomputers.

Moste runs under DEC's VMS and RSTS/E operating systems. The software package processes telephone call detail records from the output of any private branch exchange or Centrex system. A series of telecommunications management and traffic analysis reports can be generated for control over telephone expenses.

According to the vendor, each call is identified by its precise city and state destination and is priced using appropriate rates. Calls are summarized at extension, department, cost-center, division and company levels.

Calls can also be organized by account codes for billing back charges to clients or tenants. Exception reports can be produced, listing all calls in excess of a predesignated threshold of minutes and/or cost.

According to the vendor, management reports allow calls to be accounted for at every level of an organization and allocated to justifiable budgets. Wats usage is also broken down, call by call, for internal control.

According to the vendor, Moste is fully documented and supported. Ongoing maintenance and updates are available to reflect rate, tariff and central office changes. Performance-critical portions of the program are implemented in assembly language, and reports are processed using DEC's VAX Basic.

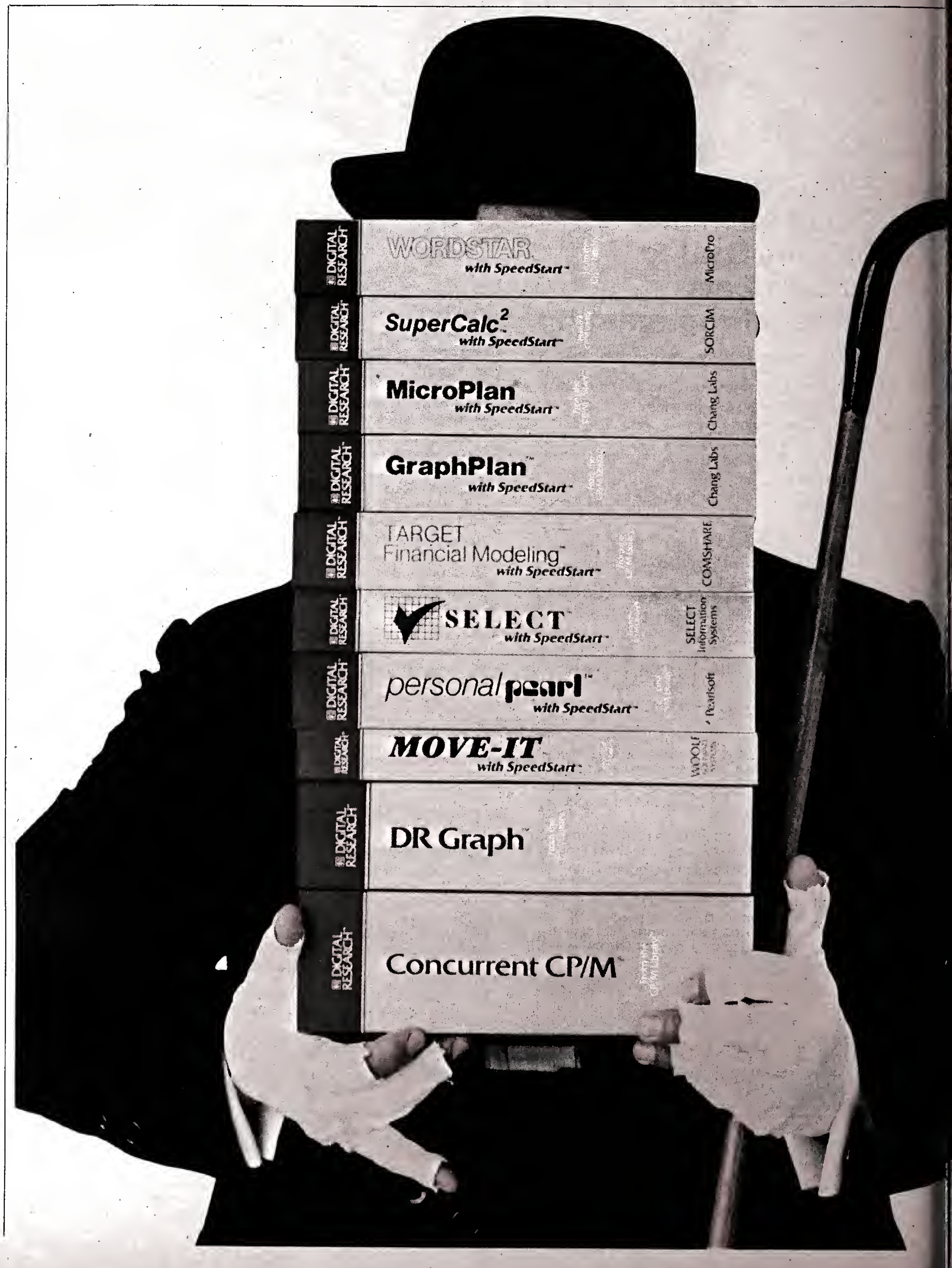
The one-time license fee for the Moste system is $17,000. For companies with multiple locations, each additional switch location can be incorporated under the license for $3,500.

Communications Analysis, 100 Fountain St., Framingham, Mass. 01701.

MASSCOMP

KIC

Masscomp has announced the addition of the Kellers Integrated Circuit (KIC) application software program to the standard software library running on its 32-bit Unix-based MC500 series and Workstation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SELECT Information Systems
personal pearl with SpeedStart
Pearlsoft
MOVE-IT with SpeedStart
WOOLF
DR Graph
Concurrent CP/M

500 computer systems.

According to the vendor, KIC is an interactive color graphics program developed at the University of California at Berkeley for the mask-level design of integrated circuits. The program's color graphics editor can work with Nmos, Cmos and bipolar integrated circuit technologies, and it has symbolic layout and split-screen capabilities that reportedly provide a design tool for layout engineers, according to the vendor.

The KIC screen is said to incorporate both a coarse viewport and a fine-positioning viewport called a magnifying glass. The user creates geometries on a two-dimensional mask-coordinate system with integer coordinates.

The package reportedly supports several types of layout geometries, including boxes, polygons, wires, labels, lines, flashes, arcs and doughnuts. KIC supports layouts of up to 25 layers and can be recompiled to increase this standard maximum number of layers.

The MC500 series and the Workstation 500 processors reportedly both feature the high-performance computational and graphics display power needed for computer-aided design and engineering and other sophisticated tasks.

The KIC application software is free of charge to existing users. A typical configuration of the Workstation 500, including the standard software library with the KIC application program, is priced at $43,000, the vendor said.

Masscomp, One Technology Park, Westford, Mass. 01886.

HOURGLASS SYSTEMS, INC.
Calc Master

Hourglass Systems, Inc. has introduced a spreadsheet program for users of the Wang Laboratories, Inc. 2200 MVP, LVP, SVP and VP computer systems. Called Calc Master, the program incorporates consolidation, window access to other spreadsheets, alphanumeric sorting and logic comparison.

A typical Calc Master module contains a data capacity of up to 64 columns and 999 rows, the vendor said. For larger spreadsheets, the package has consolidation and file look-up features to transfer data among spreadsheets. In addition, Calc Master can be bridged to other programs such as accounting, sales records and inventory.

According to Hourglass Systems, Calc Master is designed around the concept of a cell which contains the data at the intersection of a column and a row. Any cells may contain text or numeric data. In addition, the program allows the user to vary column widths individually, control decimal and comma formats and use prefix characters such as the "$" sign, the company noted.

Other features of the package include global editing, data block moves, "if-then" logic, on-screen Help, sorting, regression analysis, curve fitting, random number generation for simulation and trigonometric and logarithmic functions.

Pricing for Calc Master begins at $495.

Hourglass Systems, P.O. Box 312, Glen Ellyn, Ill. 60138.

AGS MANAGEMENT SYSTEMS, INC.
PAC II; PAC III

AGS Management Systems, Inc. has announced that its PAC II and PAC III project management systems are now available for the Digital Equipment Corp. VAX-11 systems.

The VAX-11 versions of PAC II and PAC III have been improved with network and management graphics, the vendor said. The packages' network graphics are in color and are said to provide a clear picture of network and critical activities. Management graphics, also in color, displays schedules and budget information in pie charts designed for management presentations, the vendor said.

PAC II can plan, monitor, cost and analyze projects, the vendor said. In addition, it is said to simulate, schedule, allocate resources, evaluate networks, develop float, provide target scheduling and offer standard and custom reports.

PAC III is a network scheduler and cost processor and can direct and tract multitask projects across functional lines, the vendor said. It can be used by more than one group in an organization to provide an economical single standard for project management.

The VAX-11 version of PAC II is priced at $42,000, and the VAX-11 version of PAC III is priced at $56,000.

AGS Management Systems, Department MS, 320 Walnut St., Philadelphia, Pa. 19106.

STEEL HEDDLE MANUFACTURING CO.
AIM

Steel Heddle Manufacturing Co. has announced Application Integration Module (AIM), an enhancement to its Wizard Mail IBM mainframe electronic mail system.

The enhancement allows electronic messages to be integrated into in-house applications, according to the vendor.

Whenever a message is sent, an audible alarm is sent to a user's terminal, and a message appears on the screen, the vendor said. Wizard runs under CICS, BMS or VM operating system environments, the vendor said.

The program costs $395 without the new option, $495 with it. After March 1, the prices will rise to $895 and $995, respectively.

Steel Heddle Manufacturing Co., P.O. Box 1867, Greenville, S.C. 29602.

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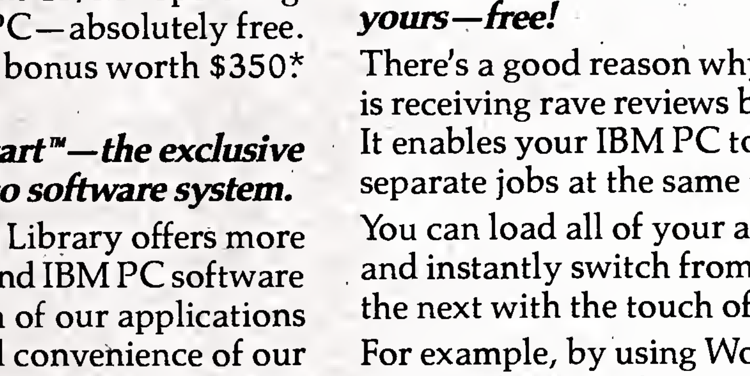

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SOFTWARE & SERVICES

REMOTE COMPUTING SERVICES

INTERACTIVE DATA SERVICES, INC.
OID Data Base

Interactive Data Services, Inc. has announced a data base designed to compute the tax liability of buyers and sellers of original issue discount (OID) bonds.

The OID Data Base is available on magnetic tape sent monthly to banks, brokerage houses, insurance companies and other firms. It is based on an Internal Revenue Service (IRS) list of corporate and government obligations and is designed to reduce the amount of time needed to prepare IRS Form 1099-OID.

The service is priced at $1,800 per year.

Interactive Data Services, 22 Cortlandt St., New York, N.Y. 10007.

AUTOMATIC DATA PROCESSING, INC.
Automatic Price/Cost Updating

Automatic Data Processing, Inc. (ADP) has announced a price and cost inventory updating service for wholesalers and distributors.

Automatic Price/Cost Updating reportedly is available now on tapes fed into ADP clients' computers or as one of the series of on-line accounting services provided to clients using ADP printer terminals.

The service, used with ADP's order entry or inventory system, is designed to eliminate manual price recording by automatically updating inventory item prices through magnetic price tapes. The tapes are provided by third-party pricing companies.

According to ADP, prices for Automatic Price/Cost Updating are flexible, beginning at $50 per month.

Automatic Data Processing, One ADP Blvd., Roseland, N.J. 07068.

ON-LINE DATA BASES

LOTUS DEVELOPMENT CORP. INTERACTIVE DATA CORP.
Lotus-Interactive Data link

Lotus Development Corp. and Interactive Data Corp. have announced an agreement under which the Lotus 1-2-3 microcomputer spreadsheet system can be integrated with Interactive Data's family of micro-mainframe business products and data bases.

According to the firms, Lotus 1-2-3 is available to Interactive Data clients who use the IBM Personal Computer or Personal Computer XT to link to Interactive Data's worldwide micro-mainframe network of financial and economic data and business software. The firms said Lotus 1-2-3 can be linked to Interactive Data's proprietary analysis language, Xsim, and its data management language, XDMS.

The Lotus-Interactive Data link will also reportedly enable clients to communicate with the Chase Econometrics Division's data bases directly through 1-2-3. Clients will be able to access and download data directly into 1-2-3, manipulate the data without being connected to the mainframe and then upload the data to the mainframe. Under the agreement with Lotus, Interactive Data will become a value-added reseller of 1-2-3.

Lotus 1-2-3 can also be linked to Interactive Data's PC Screen, an investment industry package that enables an analyst to scan more than 5,000 companies to identify those meeting his financial criteria. As an example of pricing information, the vendor said Lotus 1-2-3 is available for $435 if purchased with PC Screen, which is licensed for $4,000 monthly.

Interactive Data, 486 Totten Pond Road, Waltham, Mass. 02154.

ITT DIALCOM, INC.
Compmail+

The Computer Society of the Institute of Electronic and Electrical Engineers (IEEE) has announced that electronic mail and information services are now available for use by its 80,000 members. The services, called Compmail+, are provided by ITT Dialcom, Inc.

Compmail+ subscribers will be able to communicate with each other via terminals and also order IEEE Computer Society publications electronically from an on-line catalog, IEEE said.

Other features will include on-line registration for IEEE conferences, seminars and meetings and electronic calls for papers in conjunction with those conferences, according to an IEEE spokesman.

A group bulletin board where members can post notices for all Compmail+ subscribers is also available. Access to the full range of ITT Dialcom information services is also available.

Compmail+ can be used with any Ascii-compatible terminal, personal computer or telex terminal. Each user will be responsible for his personal usage at charges of $16/hour.

There are no start-up fees, enrollment fees or minimum charges except for direct billing clients who will have a $25 monthly minimum. IEEE members have credit card or direct-billing options.

Credit card billing, using either Visa or Mastercard, will be handled through the Maryland National Bank, the IEEE spokesman said.

A special introductory offer of a $30 credit against usage, excluding external data base fees, is available to IEEE members.

IEEE Computer Society, 1109 Spring St., Silver Spring, Md. 20910.

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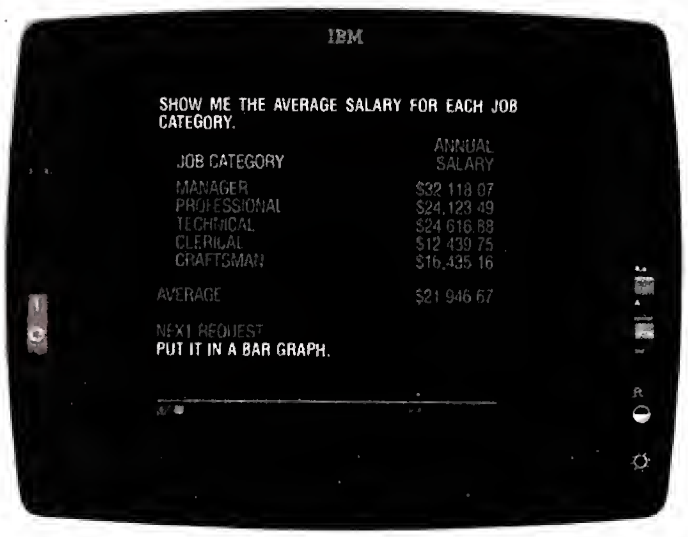

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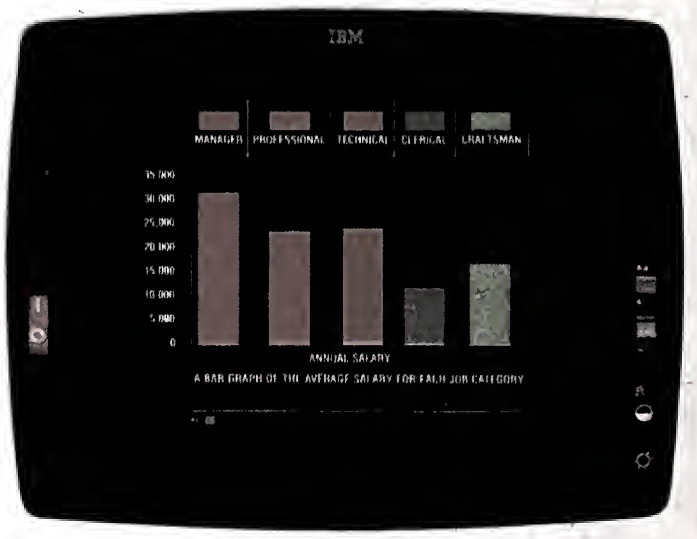

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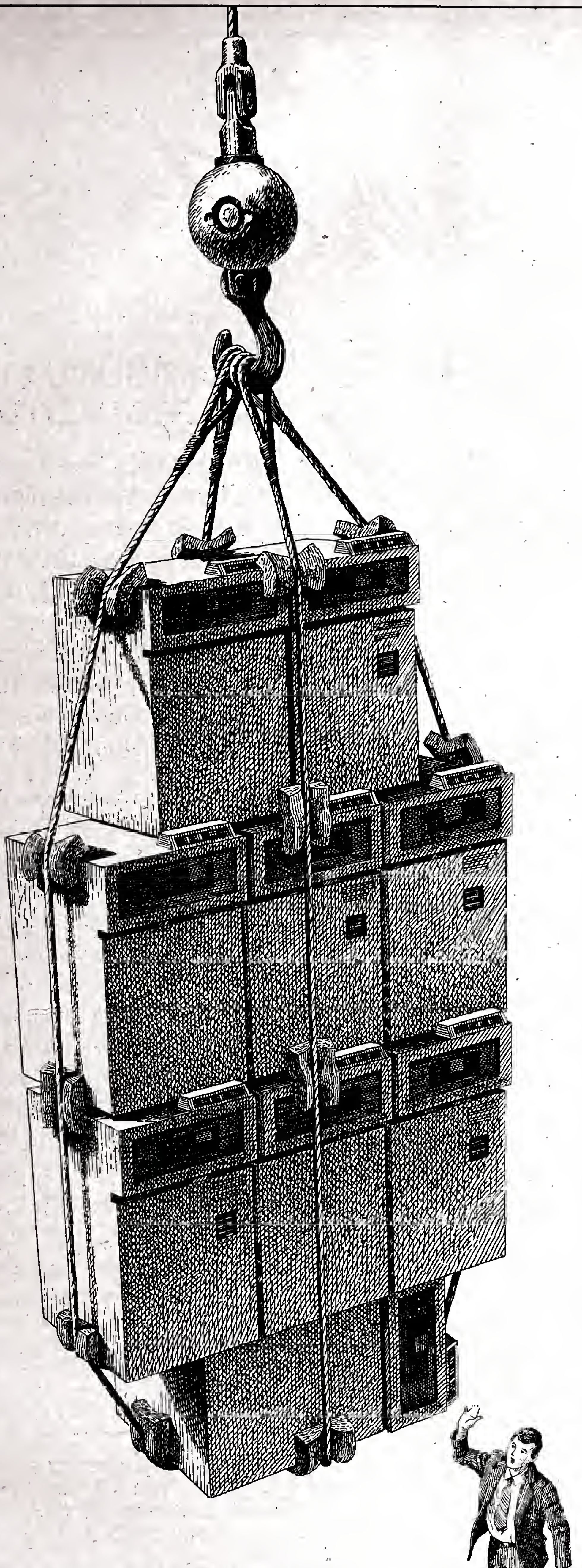

How to put 640 square feet of computer disk storage in a 7′x 3′ space.

There's no way to store that much data in that little space if you're using disk drives. Even 3380 class. But Masstor Systems' M860 Mass Storage System – a different kind of data storage technology – can solve the problem.

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The M860 and MASSNET are two of a family of Masstor Systems' strategic products that allow you to move, store and share data efficiently and economically.

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314

COMMUNICATIONS

Recruiting fires stoked

In telecommunications industry

NEW YORK — Hiring and recruiting in the telecommunications industry have started to heat up again. During 1983 the recession in hiring in the industry gradually ended, and the job market became markedly tighter, but the industry is still not up to prerecession hiring-activity levels, according to a survey recently released here.

The "15th Annual Telecommunications Salary Survey," by Personnel Resources International, Inc., also reported that prevailing industry salary rates have continued their climb, especially in telecommunications specialties experiencing tight supply conditions such as junior- and intermediate-level technicians in private branch exchange and data communications areas as well as design and systems engineers, advanced network planners and telecommunications software development personnel, according to the report.

> "*In the telecommunications manager, they're looking for someone with a more technical background . . . Ten years ago they just wanted somebody that knew something about phones. — Jay Jacobson, president of Personnel Resources.*"

In order to fill the shortages in these job areas, Jay Jacobson, president of Personal Resources, said he anticipates retraining programs and a relaxation of degree requirements. "Some of these jobs will be filled with people from the military, and there will be some coming out of the telephone companies, but not many. Companies will relax their degree requirements, and they'll train technicians to be so-called engineers."

The first effects of the AT&T breakup to be seen in the manpower market are among independent suppliers, who hope to compete against Western Electric Co. in improving their sales to the regional telephone holding companies, the survey said. Jacobson has had requests from them for sales personnel and for systems, development and product-support engineers with experience with Bell or other suppliers.

According to the survey, Personnel Resources has had a number of requisitions from independent telephone companies for planning engineers and managers, both in engineering and marketing, with a preference for candidates with a B.S. in electrical engineering and an MBA for both functions. Some telephone companies sought sales and technical personnel for their unregulated sectors in the radio, interconnect, supply and consulting businesses.

Cellular radio has created demand for a large number of radio systems engineers, coordinators, technicians and salesmen. Manufacturers of cellular radio hardware also are seeking design and development technical personnel.

They especially are interested in technical personnel who can integrate telephone and radio equipment.

Specialized common carriers did not seem to be affected much by the recession and continued to look for all types of personnel. Some data carriers had special needs for engineers with backgrounds in packet switching, fiber optics and other new technologies. The demand from resale common carriers has been uneven, as some have experienced financial ups and downs. Satellite carriers listed fewer openings than in 1981. Telephone interconnect companies continued to look for experienced marketing and installation personnel, but refined their needs and specifications, as their industry has reached a point of maturity.

Large telecommunications users, such as banks, insurance companies, general energy and manufacturing firms, started looking for analysts and telecommunications managers in late 1983 after a general hiatus, the survey said.

"In the telecommunications manager, they're looking for someone with a more technical background," Jacobson said. "Ten years ago they just wanted somebody that knew something about phones or someone who was a salesman for the telephone company. But now they want much more experience in networking and certain state-of-the-art equipment, and they want an engineering background or computer science background, where at one point a liberal arts or business degree seemed adequate."

According to Jacobson, telecommunications salaries increased an average of 8% to 9% last year, and he expects the market to pick up with the improving economy.

The survey is free.

Personnel Resources, 342 Madison Ave., New York, N.Y. 10173.

Tymshare service integrates nets

Tymshare, Inc. has announced a value-added data communications service called Edi-Net, which allows direct computer-to-computer transmission of business documents between different organizations with dissimilar computers and document formats.

The Edi-Net service integrates use of Tymshare's public packet data communications network, Tymnet, with a collection of processing capabilities to identify, process and deliver documents electronically, the company claimed.

Edi-Net delivers a highly formatted message that can be directly processed by the recipient's computer, Tymshare said.

For an organization capable of generating a standard message, Edi-Net provides a store-and-forward service for message distribution.

The service is capable of handling any standard message, including the Uniform Communication Standard, now used by the grocery industry, and the Ansi X12 standard.

The price for Edi-Net service ranges from 35 cents to 80 cents per 1,000 characters transmitted.

According to Tymshare, pricing is dependent upon communications options, time of day transmitted and total character volume.

Tymshare, 20705 Valley Green Drive, Cupertino, Calif. 95014.

E-Mail expected to precipitate major changes

PARSIPPANY, N.J. — The burgeoning acceptance of electronic mail as a viable messaging conduit spells major changes for both business and industry, according to a study recently released here.

By the close of 1983, 18% of all U.S. businesses used some form of computer-based electronic mail. And with close to 20% actively planning to implement electronic mail in the near future, a clear message in dollars and cents is beginning to get through to vendors, according to "The Report on Electronic Mail" by The Eastern Management Group.

Larger companies, as measured by the number of employees, have been the first to apply comprehensive electronic mail systems. The report states that 38% of all companies employing over 50,000 employees presently use electronic mail. Conversely, of companies with fewer than 1,000 employees, only 11% have considered the sometimes prohibitive expenses as justifiable.

Upward turn expected

According to John Malone, president of The Eastern Management Group, those figures are expected to take a turn upwards. "It's not surprising to find that of those organizations with over 50,000 employees that currently do not utilize electronic mail, close to 100% are either planning or considering its future use," he said. "What is somewhat startling is that well over 50% of businesses with less than 1,000 employees have similar intentions."

Aggregate revenues in 1983 from electronic mail technologies (excluding computer-based message systems) approached $1.5 billion, according to the study. Contributing to these revenues were monies from teleprinters (56%), store-and-forward voice systems and services (6%), intelligent copiers (11%) and facsimile units (27%).

"The next handful of years will be pivotal," Malone said. "Industry match-ups and conflicts which have been developing recently will intensify. Revenues from one technology will shift to another. Users, who have themselves become increasingly sophisticated, are not fond of redundancy — not in today's corporate environment where each dollar invested must be justified.

"A natural result of close technological scrutiny will be a reduction in consumption of overlapping instruments," Malone continued.

"Why sink money into telex, intelligent copiers and facsimile? Some industries are bound to suffer erosion as others prosper. The trick will be to anticipate in which direction the trends are heading," he said.

The report indicates that by 1987 electronic mail aggregate revenues will have more than doubled the 1983 total, as users pour close to $3.2 billion into the different technologies.

The report, which forecasts the spreading of electronic mail through 1991 for technologies such as computer-based message systems, telex, store and forward voice, facsimile and intelligent copiers, predicts a good deal of interindustry casualties. But, despite such casualties, the market as a whole will prosper.

The report costs $1,500.

The Eastern Management Group, 4 Century Drive, Parsippany, N.J. 07054.

RIXON

Rixon brings out a full-duplex modem for use on a DDD network or two-wire private line/61

INSIDE

- Alaska will get its first public packet-switched network. The $2 million network supplied by Tymnet will provide statewide access/**65**
- The IBM Personal Computer and Personal Computer XT can now emulate the functions of an IBM 3780 or 2780 with terminal emulation products from Software Dynamics/**61**
- A file controller for point-of-sale terminals debuts/**61**
- A local-area network for Kaypro portable computers was brought out by Adevco. Up to 100 machines can connect/**61**
- A fiber-optic video link providing four channels of color or black-and-white video was Introduced by Anaconda/**62**

NEW FOR IMS

BMP RESTART
BATCH DL/I RESTART

Automatic restart of BMP and BATCH DL/I jobs

- Eliminates manual intervention at restart for jobs that issue IMS XRST (Restart) calls.
- No JCL or application program changes are required.

IMS input logtape never required for restart

- Checkpoints are automatically identified and retrieved from a Restart Dataset which can be shared by multiple IMS systems.

Multiple restart options provided

- Jobs may be restarted by original job name or separate restart job name.
- No limit on number of jobs which may be restarted.
- Displays provide complete status of all restart jobs.

Free 30 day trial

BMP RESTART and BATCH DL/I RESTART are available for a free, no obligation, 30 day trial.

For more information, return the coupon below.

For faster action, call (713) 491-8800.

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COMMUNICATIONS CONTROLLERS

TRANSACTION MANAGEMENT, INC.

TMI-9110 Advanced File Controller

Transaction Management, Inc. has announced the TMI-9110 Advanced File Controller for its TMI-2100 point-of-sale terminals.

When the TMI-9110 is connected to the terminals through a high-speed communications link, it supports Universal Product Code symbol scanning for up to 50,000 items, according to the vendor.

Software specially written for drug stores is part of the system. Other components of the package include a 10M-byte, Winchester-style, fixed head disk; a 365K-byte, removable flexible diskette; data communications hardware; a CRT terminal; a keyboard; and a printer. The price for the TMI-9110 Advanced File Controller is $4,995.

Transaction Management, 100 Keystone Road, Montgomeryville, Pa. 18936.

PROTOCOL CONVERTERS

SOFTWARE DYNAMICS, INC.

SDI3780; SDI2780

Software Dynamics, Inc., has announced two communications emulators for the IBM Personal Computer and the Personal Computer XT.

The SDI3780 is designed to emulate the IBM 3780 RJE workstation. It is said to emulate all functions except Home Mode and On-Line Test Mode. The SDI2780 is said to emulate all functions of the IBM 2780, except Six-Bit Transcode, Synchronous Clock and Off-Line Operation.

According to the company, reading, printing and punching are simulated via disk or diskette and IBM PC-DOS-supported printers on both products. The software emulators require an expansion slot resident in a binary synchronous communications adapter board. Now available, the SDI2780 and SDI3780 are priced at $599.

Software Dynamics, P.O. Box 247, Dunedin, Fla. 34296.

MULTIPLEXERS/ MODEMS

INTERNATIONAL DATA SCIENCES, INC.

Models 6220; 6240

International Data Sciences, Inc. has announced the Model 6220 and the Model 6240 limited-distance modems.

The Model 6220 was designed for asynchronous operation over private or leased, two- or four-wire, nonloaded, metallic (twisted-pair) lines at speeds up to 9,600 bit/sec, the vendor said.

It can be used in both point-to-point and multidrop network configurations and is suited for local data distribution up to 16 miles, according to the vendor.

The Model 6240 can be used in both point-to-point and multidrop network configurations and is suited for short-haul data transmission.

It provides asynchronous operation at data rates of up to 4,800 bit/sec over loaded lines and up to 9,600 bit/sec over nonloaded lines, according to the vendor spokesman.

The Model 6220 is priced at $300, and the Model 6240 costs $400.

International Data Sciences, 7 Wellington Road, Lincoln, R.I. 02865.

ANCHOR AUTOMATION, INC.

Volksmodem

Anchor Automation, Inc. has announced the Volksmodem, which interfaces with most personal computers.

The modem features a 300 bit/sec operation, plug compatibility with any wall phone jack, full/half duplex switch, voice and data switch for phone use without modem disconnection, advanced Cmos low-power circuitry and standard 9V battery power with automatic selection of originate/answer mode, according to a vendor spokesman.

Volksmodem is priced at $79.95.

Anchor Automation, 6913 Valjean Ave., Van Nuys, Calif. 91406.

RIXON, INC.

R2424

Rixon, Inc. has introduced the R2424, a microprocessor-based full-duplex modem that operates over the direct distance dialing (DDD) network or two-wire private lines.

The modem operates synchronously or character asynchronously at speeds of 2,400 or 1,200 bit/sec.

For alternate voice and data operation, a front-panel talk/data switch is included to allow calls to be answered manually with the telephone or automatically under the control of the data terminal equipment, according to a spokesman for the vendor.

The R2424 is priced at $1,195, the vendor said.

Rixon, 2120 Industrial Pkwy., Silver Spring, Md. 20904.

LOCAL-AREA NETWORKS

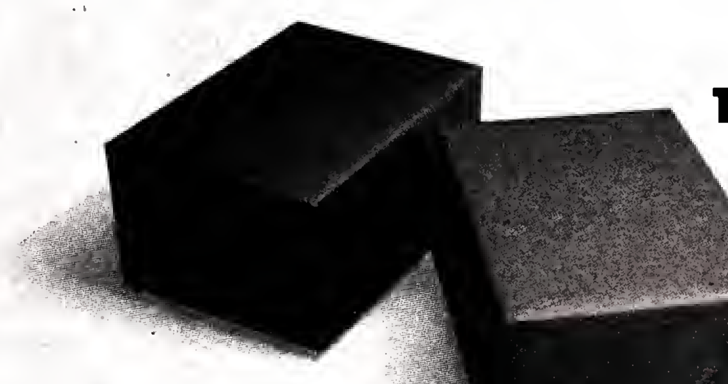
ADEVCO, INC.

Web

Adevco, Inc. has announced the Web, a local-area network system for Kaypro Corp.'s Kaypro computers.

Continued on page 62

Everything a VAX user could ask for in a storage subsystem.



The Emulex package deal.

Software transparency, low prices, rental/purchase option plans, a trade-in program and a service security blanket. Included are pretested drives and controllers; direct factory installations; fulltime hardware/software applications assistance; and nationwide service through Control Data, General Electric and Tymshare.

Emulex innovation—introducing our Eagle disk/Keystone tape combination.

Where else can you get a unit that optimizes the Fujitsu Eagle's 1.8 MB/sec transfer rate and provides backup, archiving, journaling, and the media interchangeability of ½-inch tape? All in one 42-inch cabinet. Best yet, the PXD-51 is available in six DEC-emulating models for PDP and VAX users on the CMI, SBI or Unibus.

The world's best drives and controllers.

Emulex subsystems let you be very picky. You select proven tape drives and disk drives from 80 to 675 MBytes. Plus you can mix and match fixed and removable disk drives of varying sizes and configurations. At the heart of the subsystem is an Emulex controller designed specifically for your particular DEC CPU.

Emulex has been and continues to be the pioneer in DEC-compatible subsystems. And in each product our objective is clear: to make your DEC system faster, more efficient and capable of processing larger, more complex programs more reliably than any other alternative.

Find out more about the total Emulex package. Phone toll free: (800) 854-7112. In California: (714) 662-5600. Or write: Emulex Corporation, 3545 Harbor Blvd., Costa Mesa, CA 92626.

DEC and Unibus are registered trademarks of Digital Equipment Corp.
Eagle is a trademark of Fujitsu Corp.
Keystone is a trademark of CDC Corp.

EMULEX

The genuine alternative.

COMMUNICATIONS

Continued from page 61

The system consists of hardware modification and networking software. Connected by ordinary wire, each computer can communicate with every other computer on the network, the vendor said.

Up to 100 machines can plug into the net in any combination of Kaypro II, 4 or 10 computers. The system can operate over a distance of up to 2,000 ft. The product costs $350.

Adevco, P.O. Box 606, Camp Hill, Pa. 17011.

DATA LINK
Models 310, 310A; Model 310SC

Data Link has developed a family of local-area network products that utilizes existing twisted pair phone lines to form local data communications networks.

The Model 310 asynchronous line interface adapter was designed to operate in point-to-point, multipoint or switched user-routing networks. As many as eight simultaneous, full-duplex, 9,600 bit/sec data transmissions may take place over a single twisted pair, according to the vendor.

The 310A line interface adapter and a companion supervisory controller, the Model 310SC, were designed for local-area networks with as many as 999 addresses. With the Model 310 and a 310SC, over 30 users may operate on a single eight-channel bus.

Prices for the line interface adapters start at $350 for the Model 310 and $525 for the Model 310A.

Data Link, Suite D-1, 1085 N.W. 12th, Issaquah, Wash. 98027.

PERSONAL COMPUTER GATEWAY, INC.
Data Pouch

Personal Computer Gateway, Inc. has introduced Data Pouch, a personal computer networking system.

Some of the product's features include an RS-232 interconnect to virtually all personal computers, 80M bytes of disk storage and a star network rather than a ring network. Designed to be used by up to 16 users simultaneously, the product allows transmission speeds up to 9,600 bit/sec and direct-line or dial-up interfacing. It also lets users take advantage of existing in-house telephone wire or install standard four-wire lines, the vendor said.

The price for the 20M-byte model is $13,000; the 80M-byte model costs $18,000.

Personal Computer Gateway, 22 Daniel Road, Fairfield, N.J. 07006.

TEST EQUIPMENT

ANDERSON JACOBSON, INC.
EDR option board

Anderson Jacobson, Inc. has announced an error detection and retransmission (EDR) option board for the company's AJ 4048 full-duplex modem.

The board provides data transfer at 4,800 bit/sec in full-duplex, asynchronous data transmission.

Data flow from the terminal continues uninterrupted during the retransmission. A high-level data link control-like protocol eliminates delay by allowing the EDR to transmit new frames while waiting for old ones to be acknowledged, the vendor said. The price is $495.

Anderson Jacobson, 521 Charcot Ave., San Jose, Calif. 95131.

AUXILIARY EQUIPMENT

3M CORP.
API kit; BPI kit

The 3M Corp. has introduced an asynchronous protocol interface (API) kit designed for use with computers using serial communications, including many micros and minicomputers, and its biphase interface (BPI) kit, designed for operation with IBM 3278; 3276 and 3178 terminals.

The API kit can also be used to link the company's 900-page Search to its Micropoint II index processor, an electronic file-management system. The API kit operates at bit/sec rates from 50 to 19,200, using RS-232C ports and the Ascii code set, the vendor said. Each kit costs $2,495.

3M, P.O. Box 33600, St. Paul, Minn. 55133.

ANACONDA WIRE & CABLE CO.
Ericsson's ZAV 101 fiber-optic video link

Anaconda Wire & Cable Co., a member of the Ericsson Group, has announced Ericsson's ZAV 101 fiber-optic video link, which provides transmission of up to four channels of black-and-white or color video.

The link permits a transmission distance of 3 km (1.8 miles), which can be expanded to 8 km (5 miles) when several links are used in a series as repeaters. Signal bandwidth is 50Hz to 6 MHz.The price for a one-channel system is $1,790.

Anaconda Wire & Cable, 11200 W. 93rd St., Overland Park, Kan. 66204.

See **AUXILIARY** page 63

Has your most productive asset been working at half speed?

Look at it this way.

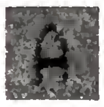
If you had to shade screen glare with one hand, enter data with the other. Hour after hour. Just how efficient would you be?

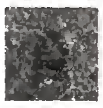
The fact is, CRT glare takes its toll. On your terminal users. And on department productivity.

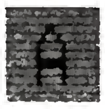
But now there's a sensible solution.

Introducing Glare/Guard® anti-glare panels.

Glare/Guard instantly eliminates up to 94 percent of all CRT glare. Resolution is always sharp. And image brightness and clarity are dramatically enhanced — even under bright, fluorescent lighting.


Without anti-glare panel


Etched panel


Glare/Guard

The result? No screen washout.

Glare/Guard's secret is HEA® — a special High-Efficiency Antireflection coating we applied to the windows of NASA's Space Shuttle. And only Glare/Guard has it.

Glare/Guard's durable, laminated-glass design lasts indefinitely. It quickly retrofits to virtually every leading display terminal — no tools required. Its smooth surface is easily cleaned. And Glare/Guard sells for $99, regardless of display size.

Of course, there are less expensive anti-glare products available. But the nylon strands of mesh screens cause fuzzy images. While etched panels merely spread glare around and blur resolution.

Only Glare/Guard does exactly what an anti-glare panel is supposed to do. And that's getting your terminal user's attention out of the glare, and back onto the screen.

Glare/Guard panels cut glare 94%.

Call 800-447-4700 for free brochure.

Glare/Guard anti-glare panels are another quality product manufactured by OCLI. Just call us toll free and we'll send your free brochure, including our helpful sizing guide. Or write Glare/Guard, OCLI, Dept. 109D, 2789 Northpoint Parkway, Santa Rosa, CA 95407-7397.

Better yet, place a trial order with your dealer and install Glare/Guard panels on your busiest terminals. You'll see the difference, instantly.

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A difference you can see.

Let your people go.

Let's begin by giving you the credit you deserve.

You're part of an organization that's rushing past today's goals and is poised to boldly attack the future. You and people around you are capable of greatness and eager to prove it. The minds you need are in place. Now, set them free.

Join the revolution in progress.

Like any significant intellectual revolution, the arrival of high tech management tools was greeted with some reluctance by people who had managed to get on rather well without them.

But the value of a business person's time and the pressure of competition have made the personal computer a partner in our business life.

Given that as a fact, the question is, how do you make the talents of this new partner work to your advantage?

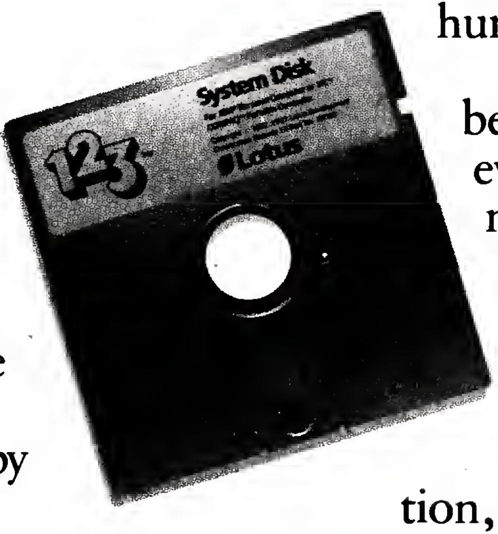
You have probably already made a decision—or you may be making it now—about the personal computer you'll employ.

But as you discover more about what this technology can accomplish, you'll find it essential to learn more about the software that drives the hardware.

Your next great decision.

Now that we've discussed the necessity of working with software, let's consider which software is capable of working with you. Naturally, we're somewhat prejudiced, but frankly, 1-2-3™ from Lotus™ is a classic combination of simplicity and sophistication; a management tool that encourages the computer novice and inspires the computer expert. That's why many people consider 1-2-3 from Lotus to be the most productive software in the world.

The fact is, while the phrase 'integrated software' has been tossed about by many software companies, 1-2-3 from Lotus made it a reality by combining spreadsheet, information management and graphic functions into one powerful, easy to use program.



Moreover, this program works at a pace up to five times faster than anyone else's.

Now we can't promise that you'll work five times faster. But we will guarantee that with 1-2-3 from Lotus, you'll be inspired to try.

The Lotus position.

Long before the world was introduced to 1-2-3 from Lotus, the lotus position referred to a posture of thoughtful repose, where the body was relaxed and the mind was set free to travel as far as it could.

And that concept of letting human intelligence seek its potential is the essence of Lotus today.

1-2-3 from Lotus is the first software that's truly compatible with the most incredible personal computer ever created—the human mind.

For we believe the best thing we could ever offer decision makers is the chance to discover how much they really can accomplish.

Let your people go.

For more information, call 1-800-343-5414 (In Massachusetts call 617-492-7870) and find out more about 1-2-3 from Lotus.

Lotus

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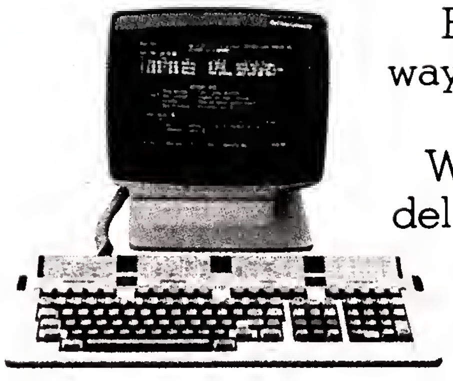
DATA GENERAL INTEGRATED OFFICE AUTOMATION



Burying information under a ton of mail at the bottom of your in-box is not the best way to get it when it's critical to a decision.

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Best of all, instead of having to dump your existing equipment to automate your office, you can build the CEO system around it.

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Instead of just a series of personal computers, each CEO workstation becomes part of a global network, with access to data from IBM mainframes.

AS LITTLE AS $5,000 A WORKSTATION

And with the CEO system, the cost per workstation can be as low as $5,000, depending on application.

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Data General
a Generation ahead.

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AUXILIARY

from page 62

RAPICOM, INC.
CCITT Group 3

Rapicom, Inc. has introduced the 5000 microprocessor-controlled CCITT Group 3 facsimile device, which provides a built-in 9,600 bit/sec step-down modem for a document transmission speed of 15 sec/page.

The product is a desktop digital facsimile transceiver that incorporates automatic broadcast functions via programmable memory.

Some features include memory storage of up to 100 telephone numbers for autodialing; an assigned three-digit code for accessing stored telephone numbers; and a redialing sequence if a remote terminal fails to accept a telephone call from the transmitting facility, the vendor said. The price is $6,200.

Rapicom, 7 Kingsbridge Road, Fairfield, N.J 07006.

DATA SWITCH CORP.
Model 600

Data Switch Corp. has introduced the Model 600 data processing switch designed for the one- or two-IBM or compatible CPU environment.

The Model 600 handles data throughput speeds of up to 8M byte/sec and supports data streaming. Synchronous switching allows switching onto and off of an active channel without interrupting CPU operations, the vendor said.

All equipment interconnections are displayed on the Model 600 control panel. Key-and-lock security is provided to prevent unauthorized configuration changes. The product also has a diagnostic display and built-in signal generator for monitoring signals passing through attached channels, according to the vendor. Its price is $25,700.

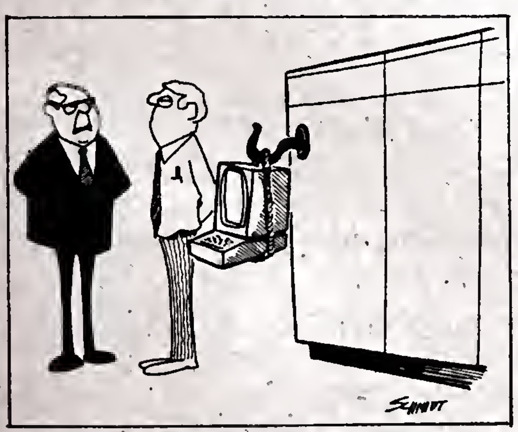
Data Switch, 444 Westport Ave., Norwalk, Conn. 06851.

WICAT SYSTEMS, INC.
ICI board

Wicat Systems, Inc. has announced an intelligent communications interface (ICI) board for use with the company's multibus product line (Systems 150, 155 and 160).

The ICI board features a local Motorola, Inc. 68000 processor dedicated to handling character I/O and contains 16K bytes of random-access memory for local program and data storage. It can support a maximum of eight RS-232 asynchronous I/O ports and performs data I/O at 9,600 bit/sec on all ports simultaneously, the vendor said. Prices range from $1,295 to $2,870.

Wicat Systems, P.O. Box 539, 1875 South State, Orem, Utah 84057.



'When you said it was "hooked up" to the mainframe, I thought you meant . . .

ADVANCED SYSTEMS CONCEPTS, INC.
AMI

Advanced Systems Concepts, Inc. has announced the AMI set of devices that allow from eight to 32 RS-232 data lines on a demand basis to transmit to one RS-232 output port.

The units can be used with bar code readers, optical character readers, hand-held terminals, word processing workstations or production line monitors.

Units simultaneously monitor all input lines. Transmission is bidirectional, and rates from 150 to 19.2K bit/sec are supported, the vendor said. Prices range from $1,843 to $2,643.

Advanced Systems Concepts, 435 N. Lake Ave., Pasadena, Calif. 91101.

Alaskanet now operational

ANCHORAGE, Alaska — Alaskanet, the first Alaska-based public packet data communications network, became operational in early January.

Supplied by Tymnet, Inc., the $2 million network provides statewide access through sites in Anchorage, Fairbanks, Juneau and Prudhoe Bay. An additional location in Seattle gives direct access from the 48 continental states.

Alaskanet is owned by Alascom, the operator of telecommunications services in Alaska. It was installed in seven months and consists of 17 interconnected nodes.

The network nodes provide host computer and terminal interfaces, switching, data flow and error control, user access and routing, remote monitoring and control and the recording of accounting information and other functions.

The primary "supervisor," a computer that selects the most efficient path from data source to destination, together with the network monitor and control system make up the network control center in Anchorage. A backup supervisor is located in Fairbanks. The system includes a remote monitor, control-diagnostic capabilities of the node and modem systems and 24-hour staffing at the control facility.

How to load your 38 for maximum MRP performance

Not many System/38 users know how. Perhaps you already found that out by using another system. If this is your first time, check out the features that are important to you. Our users enjoy the benefits of a closed-loop MRP II system that allows direct access for anyone to all the information stored. We have a query facility that lets you generate user reports. And we utilize an advanced data base architecture which increases programmer productivity, making changes needed for expansion simple and economical. We even have a PC link which lets you transfer information to your IBM Personal Computer for interaction with popular planning micro products such as 1-2-3™ from Lotus®

Loaded with RMS/38 the potent IBM System/38 can make your business hum with the precision these economic times demand. Loaded with anything else you may have to settle for second best. In the fiercely competitive arena for manufacturing management efficiency, where survival depends on increased productivity—and profits—the software system you use can spell the difference between satisfaction or frustration, maybe even success or failure.

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Reduce inventory; eliminate parts shortages; acquire time for skillful buying; schedule production based on demand, not parts availability; determine whether to buy or build needed components; improve part number, inventory, and routing accuracy; and order in time for delivery on time. You can with RMS/38.

If your present MRP system, whether manual or automated, represents something less than a total integration of business and manufacturing systems; if it doesn't offer the distribution and financial support of closed-loop MRP II; if it doesn't offer you control in an unpredictable environment; then maybe it's time you investigated the building block software of RMS/38.

For a free demonstration or more information, contact PCR, Professional Computer Resources, 2021 Midwest Road, Oak Brook, IL 60521 (near Chicago). Also in New York, San Francisco and Los Angeles.

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BILLING
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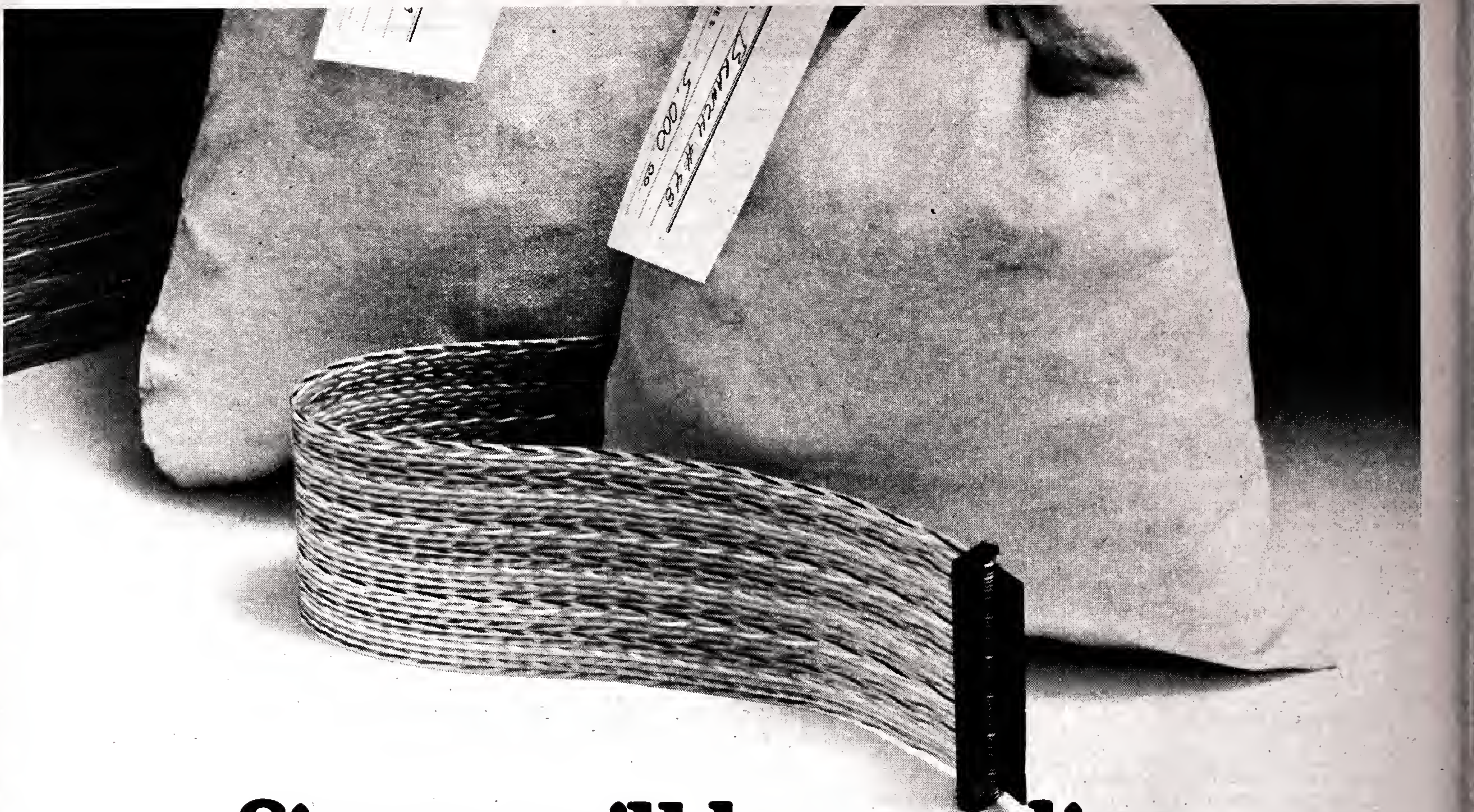
ACCOUNTS RECEIVABLE
ACCOUNTS PAYABLE
GENERAL LEDGER
RMS QUERY
RMS PC/LINK



Since you'll be spending millions of dollars per month on data communications networks, you want all the information you can get. Right?

Here's how to get it.

Just wait for your February 27th issue of **Computerworld.** Then read the special report on Data Communications Networks from cover to cover. You'll get it all:

- *Local area networks*
- *public packet-switched networks*
- *private branch exchange (PBX) networks*
- *teleconferencing networks*
- *satellite networks*
- *CATV networks*
- *videotext and facsimile networks*
- *voice/data network integration*

You'll get tutorials — bylined opinion/analysis pieces by experts in the field on the use of networks and the future of the networking industry. You'll get case studies of how companies have used specific networks to solve specific business communications problems. And you'll get information on lots more — with articles on everything from microwave links to how AT&T's divestiture will affect voice/data networks.

If you spend — or are planning to spend — millions on data communications networks, then you can't afford to miss the February 27th special report on Data Communications Networks in **Computerworld.**

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

And, if you've got product or service ads that will help our readers make informed choices for 1984 — then you need to get your ad to us by February 10th. To reserve space in the February 27th issue, call one of the sales offices listed below, or call Ed Marecki, National Sales Director.

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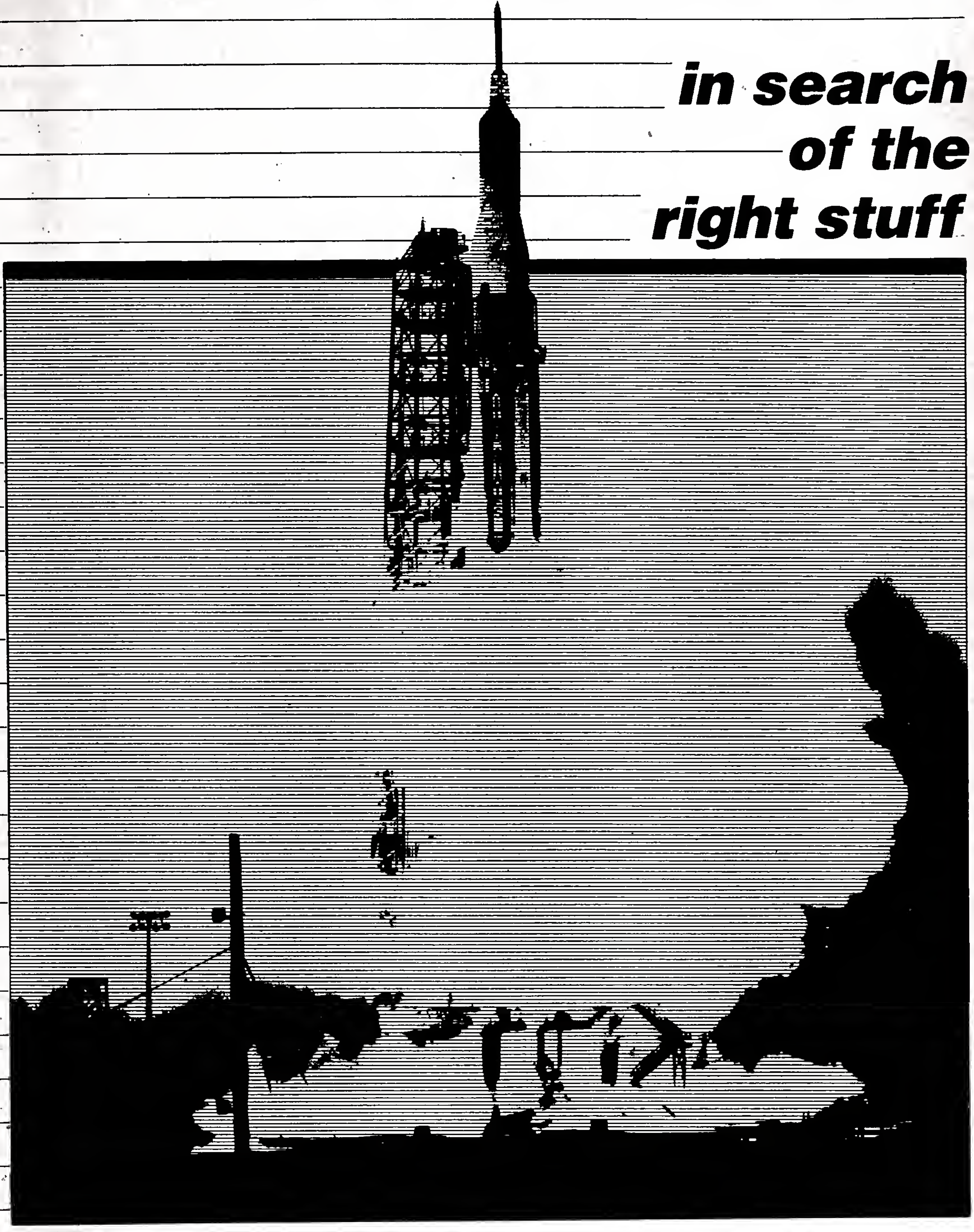
SPECIAL**REPORT**

Application packages:

in search of the right stuff



Edited by John Gallant and Paul Gillin

January 30, 1984

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Avoiding the ‘package trap’: caution advised

By Naomi Lee Bloom
and Richard Schneider
Special to CW‡

> *‘The “package trap” is the idea that the package itself solves the business problem. Its greatest danger is that once an application has been identified as amenable to a package-based solution, too little emphasis will be put on the analysis of the business problems that dictate the need for the system.’*

A lot has been written lately about the advantages of using packaged application software. Unfortunately, not enough attention has been given to the problems inherent in applying a generalized application design to a specific organization’s unique set of objectives and constraints.

The “package trap” is the idea that the package itself solves the business problem. Its greatest danger is that once an application has been identified as amenable to a package-based solution, too little emphasis will be put on the analysis of the business problems that dictate the need for the system. Some symptoms of the package trap are:

- Users who are not willing to commit time on the front end to discuss their business problems.
- Unwillingness of management information systems staff to discuss the functionality of existing systems to be replaced by the new system and/or those with which it will interface.
- Users, in general, who do not really want to know how the package works.

Adaptations must be made to the systems development life cycle to facilitate a package-based solution. Some of the ideas expressed here are broadly applicable to all package-based implementations, while some are more narrowly focused on those systems that require a significant amount of package customization.

The first and probably most important step is to select a project team whose members have previously implemented large-scale application packages. The team can be nearly invaluable, particularly if the system requires a significant degree of customization.

Another benefit of using people with specific package experience is their knowledge of the vendor’s support organization and the degree and kind of technical support the vendor is able to provide.

During the project’s concept definition phase, the recognition and understanding of the business problem is paramount. Guard against “analysis on the periphery,” where analysis is only performed on those business functions that appear to be outside the functionality of the package. Recognize that with a less-than-complete understanding of the business purpose of the system, any subsequent need for increased or modified functionality will prove difficult to implement.

It is never too early in the project to begin the fight against describing the package as a “black box.” This syndrome holds that the user puts data into the package and gets results out — how the package works is of no importance. In a situation in which some customization is necessary, the black box approach immediately falls apart. How can a package be modified to accommodate a business function outside the package’s scope if the package’s structure is not analyzed and understood?

Even beyond the consideration of package modifications in the near term, it is important to look at the package as the basis of future system enhancements. The user must understand what functionality the system will support immediately and what functions the system may be modified to support in the future. The user must also recognize that the relative difficulty of accommodating new features will depend heavily on the package’s technical architecture.

One significant opportunity presented by a package-based implementation is the ability to get some software up almost immediately. The vendor’s “vanilla” software should be installed as soon as possible on the user’s equipment. Once in place, this baseline software can be used to perform a wide array of functions, from modeling the production environment for hardware and communications analyses to prototyping user interfaces.

A corollary benefit of installing the package sooner is that it may be tested sooner. Do not assume that since a particular piece of software is in operation at several sites it will not contain bugs or undocumented features. A healthy dose of skepticism pays dividends. Develop a set of representative test data, and subject the “vanilla” package to thorough testing.

Structure the project’s development plan so as to keep the software vendor off the critical path. Experience shows that vendors often cannot respond to subtle software problems without significant lead time. You also cannot rely on the vendor to describe the business implications of his software architecture. The project team members with previous experience with the vendor’s package will be the best insurance against mismatches here.

When designing modifications and enhancements to software packages, there are a few subtleties to keep in mind. To achieve the true cost/benefit of a package-based application, efforts should be made to minimize the amount of modification. This approach will frequently require the user to choose between restructuring existing procedures to work with the package and customizing the package to work with existing procedures. Your efforts will be rewarded with substantially reduced development risk and long-term reliability and maintainability. During the system design phase, provision should be made for the way in which future vendor releases will be incorporated into the system.

Extensive testing is just as necessary for package-based applications as for custom systems. While the classic unit- or module-level test is not truly applicable to unchanged portions of the software package, it is appropriate for modules containing new or modified code. Consequently, a test plan should be developed during the system design phase which addresses the modular design of the new system as well as the business function it is meant to serve. It is crucial that the user participate heavily in all phases of testing.

Generally, vendor-supplied packages come equipped with some manner of user-oriented documentation. Significant savings may be achieved by incorporating that documentation into the system’s user manual.

Structured walk-throughs are also a necessity; even more so when they address modifications to the package. These design walk-throughs should include not only the project development team, but also the system’s immediate users and those in the DP organization who will be charged with maintaining the new system. Accelerate the development of modules that are to interface with existing systems.

Because it is prudent to keep the vendor and his product support staff off the project’s critical path, it is also important to establish an error-analysis approach that exhausts all other possible sources for an error before turning to the vendor.

Bloom is a senior principal and Schneider is a principal with American Management Systems, Inc., in Arlington, Va.

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Analyze needs before selecting packages

Requirements analysis valuable to modeling business functions

By A. B. Popek
Special to CW

Correctly defining and analyzing current and future business requirements is the best way to identify, select and implement application software packages effectively.

Although requirements analysis technology has been used traditionally for system and application development, the technology's methods for modeling business functions and data requirements are equally valuable for identifying or evaluating application software solutions.

Unfortunately, in many cases, packages are purchased to solve symptons of much greater, unrecognized business problems. Data processing departments are now finding it necessary to follow a disciplined set of analytical procedures before and during the selection process. This procedure should include analyzing the functional and informational requirements that the package will address, identifying available packages that suit these needs, comparing the packages' capabilities with the defined requirements, identifying the costs for modifying the best-suited software, if necessary, and comparing the software's benefits to its cost.

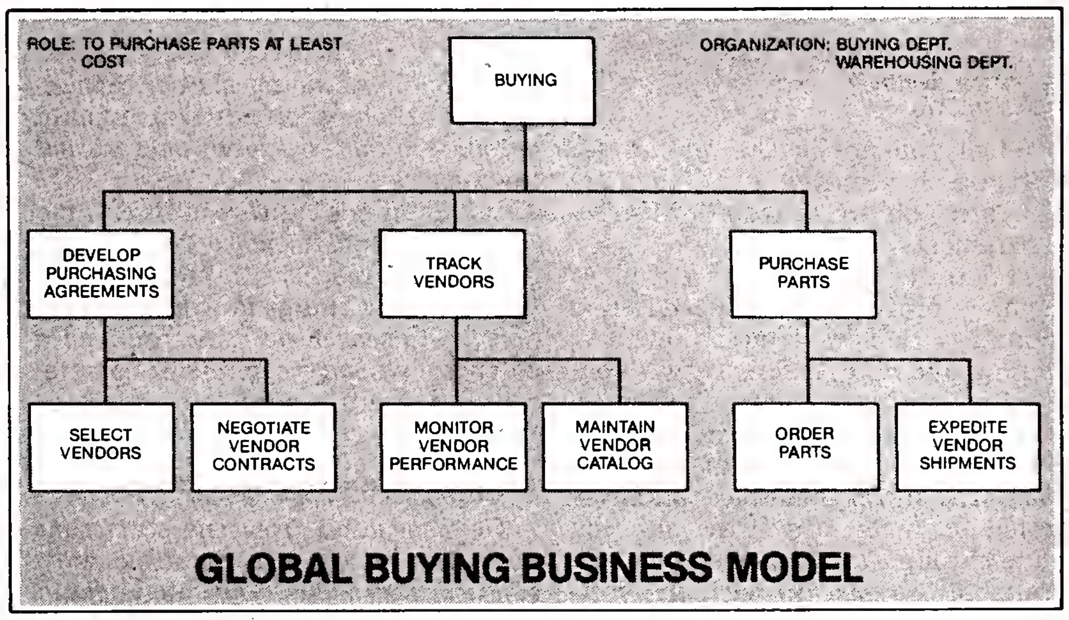
The goal of requirements analysis is to create guidelines. These are derived by analyzing both the business area needing a solution and the application software candidates. The results of this analysis process can be used to compare the ability of the packaged software to solve the problem at hand. The guidelines also can be used to form an information base for computer applications solutions not yet existing.

The data processing department should begin to determine business requirements by conducting a systematic series of interviews with users. Following extensive interviewing, six tools can be used to model and analyze the functional and data requirements. These tools include global and detailed hierarchical models, information flow diagrams, a function/data matrix, data structure diagrams and a relational model.

Each model and each diagram builds on the analysis conducted with the previous model. The new models, created in proper sequence, verify the accuracy of previous models.

The first step in this analysis process is to create a hierarchical model that represents an overview of the business area or software package being studied. The hierarchical model reduces the area being studied to the functions it performs and depicts these functions graphically.

For example, in analyzing a warehouse's processes, the functions associated with buying parts and tracking vendors are organized graphically with the subfunctions of each process listed in a hierarchical model (Figure 1).


ROLE: TO PURCHASE PARTS AT LEAST COST
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BUYING
DEVELOP PURCHASING AGREEMENTS
TRACK VENDORS
PURCHASE PARTS
SELECT VENDORS
NEGOTIATE VENDOR CONTRACTS
MONITOR VENDOR PERFORMANCE
MAINTAIN VENDOR CATALOG
ORDER PARTS
EXPEDITE VENDOR SHIPMENTS
GLOBAL BUYING BUSINESS MODEL

Figure 1

The functional components described in the hierarchical model are now used to create an information flow diagram. The information flow diagram graphically illustrates the relationships between business functions, the information, materials and data these functions use and internal and outside agents affecting that information.

For example, in purchasing parts, a purchase order for a vendor is one piece of information. The vendor order file is listed as an information stock. An information flow diagram graphically labels the function and stores it and both inside and outside agents to show the flow of information among them.

> *'The goal of requirements analysis is to create guidelines. These are derived by analyzing both the business area needing a solution and the application software candidates. The results of this analysis process can be used to compare the ability of the packaged software to solve the problem at hand.'*

The information flow diagram is also useful in describing the relationship between the functions that computer applications should support and the information used by the functions to generate outputs. Guidelines for evaluating software packages can thus be established.

The requirements analysis process includes detailed steps for analyzing the models and diagrams once they are created. This procedure includes checking for problem areas such as functional overlapping and informational bottlenecks. If a problem is found in a diagram or model, the correction is then incorporated into all previous models.

Next, the information in the first two models is summarized in the function/data matrix that shows how each function creates or uses the identified data (Figure 2). For example, in analyzing the buying model, taking orders creates a customer order document, while answering customer inquiries uses this customer order document. In a correctly organized business, if a function creates data, another should use it. If there is a different situation, this is a sign that a problem exists.

FUNCTION/DATA CLASS MATRIX FOR SALES AND BUYING BUSINESSES

DATA CLASSES FUNCTIONS	CUSTOMER ORDERS	CUSTOMER INQUIRIES	PRODUCT SPECIFICATION	TECHNICAL ADVERTISING	VENDOR PERFORMANCE	VENDOR CONTRACTS	VENDOR ORDERS	CATALOG	CUSTOMER ACCOUNTS	PART DEMAND	PART REQUISITIONS	VENDOR SHIPMENTS
TAKE ORDERS	C							U	U			
ANSWER CUSTOMER INQUIRIES	U	C						U				
INFORM CUSTOMER ABOUT PRODUCTS			C									
ANSWER TECHNICAL INQUIRIES		U	U					U				
ARRANGE TECHNICAL ADVERTISING			U	C								
MONITOR VENDOR PERFORMANCE					C		U					U
SELECT VENDORS			U		U	C		U		U		
NEGOTIATE VENDOR CONTRACTS						C				U		
ORDER PARTS						U	C	U			U	U
EXPEDITE VENDOR SHIPMENTS							U					
MAINTAIN CATALOG						U		C				

C—CREATES U—USES

Figure 2

To understand further the operation of a function, the detailed hierarchical model selects one functional component and reduces that to detailed procedures, events, conditions and decisions associated with that activity.

For example, to order parts, all the processes associated with this activity, such as getting parts for reordering, setting shipping instructions and filing purchasing orders, are represented in a hierarchical model. This detailed activity model thus creates precise specifications that can be used as criteria for comparing available software.

To take a more detailed look at the information the functions use, the data structure diagram takes actual data items, such as a vendor purchase order, and describes all their contents, such as vendor name, buyer name, purchase order number and purchase order date. As with the detailed activity model, this information is then depicted in a hierarchical model.

These data structure diagrams are then used to form a relational model, which is organized in table form. A relational model, such as one for all vendor information, consists of information that relates to each data item and illustrates the relationships between this data.

In application development projects, these detail-level models are a prerequisite for computer application design and, therefore, serve as an effective comparison tool. They also provide a base for sharing data between applications.

Once this modeling and analysis procedure is completed, a business in search of an appropriate software package knows exactly what functions the software must satisfy, what data is involved, how those functions relate to the data and how that data relates to other data within the business. In a broader sense, the business knows more about itself, about its problems and about how an application package can both help with those problems and operate with other existing computerized applications.

After the appropriate software candidates have been chosen, they are analyzed again using the same procedures. The specific requirements that each satisfies now can be compared and the best candidates chosen. The cost of modification is also calculated if that application package cannot solve all the problems in a designated area.

Developing an application software solution is greatly simplified using the technique of analyzing the business according to its detailed functional and informational needs. On the other hand, a business may discover after completing this comprehensive requirements analysis that a computerized solution is not necessary and that the problem can be rectified by other means.

Popek is executive vice-president of Technology Information Products Corp.

Applications shopping: Don't buy until it fits

Software should enhance, not revamp, operations

By Nancy N. Boyle
Special to CW‡

When you are in the market for software, it seems that everywhere you turn you are barraged with advertisements.

The trade magazines are full of them; professional newsletters abound with new product releases; your mailbox is overflowing with unsolicited advertisements; and salesmen call you on the telephone to convince you of the merits of software you have never heard of and will probably never use. How do you wade through the reams of material available to come up with the software package most suitable to your application?

Researching software packages can be a time-consuming project that could ultimately wear you down to the point of accepting a package that only slightly resembles your original specifications. More than one highly competent decision maker has been reduced to babbling-idiot status after spending time in the software maze.

The main concept behind computerizing a specific area of your operation is to take advantage of the speed and efficiency the computer can provide.

Even the best package on the market is not going to improve a sloppy or misdirected procedure. Only you are capable of doing that. Prepackaged or off-the-shelf software should enhance your current operational procedures.

It should not cause you to revamp an entire department to fit the program more readily. If your current way of doing things is working well, don't stop searching until you find a software package capable of complementing your everyday business transactions.

Software-hardware compatibility

Keep in mind from the start that not all software is compatible with all hardware. This point alone could save you hours of valuable time. To begin, find out if the product that caught your eye is going to run on your present hardware system.

Next, find out how many packages have been sold and installed to date. Most new programs inevitably contain some bugs, so you are usually better off with a time-tested package. Ask for customers' names and phone numbers, and talk to these users. No one is going to give you a better idea of how the software actually works in a real-life situation, and no one is going to tell you more honestly about support, enhancements and overall performance. If you are refused access to present customers, keep looking.

Third, take a careful look at the documentation. If it in any way resembles instructions to the astronauts from National Aeronautics and Space Administration Control, change your mind about the package, unless the end users of the system thrive on highly technical jargon. Never be embarrassed by the fact that you do not understand the documentation.

It is the software vendor's responsibility to provide you with clear, concise and easy-to-understand directions. Don't let your lack of technical expertise be intimidating. Rather, demand documentation that accommodates all levels of computer understanding.

As more and more users voice their displeasure over documentation written for electronics engineers and computer science graduates, more vendors will finally admit that what has been done in the past is no longer acceptable. The price of your software program must include helpful, easy-to-use documentation, or you can eliminate another package from the pack.

Many software packages are available with enhancements at little or no cost to the user. If you are looking at one of them, make sure you have a clear understanding of what type of change is included in the price. Once you deviate from this standard, the cost to you can skyrocket. Before you buy, find out exactly what constitutes an enhancement vs. a more costly modification.

Source code availability

Will the software package you are considering provide you with the source code, or at least the file structure, so that minor changes can be handled by your technical people? If the source code is not provided, can it be purchased separately? Is there any software maintenance contract required, or is free customer support included on an ongoing basis? Is training necessary and if so, where is the training to take place. Who pays for the cost of training — is it included in the price?

If you are looking at one or more software packages and hoping to tie one to another, as is often the case with word processing packages, will they interface with one another? Can interface compatibility be designed by one of the vendors. How much will it cost?

Only by answering these questions can you find the solution to your specific software problems.

Boyle is a marketing representative for Whelan Associates, Inc., a computer systems consulting firm located in Spring House, Pa.

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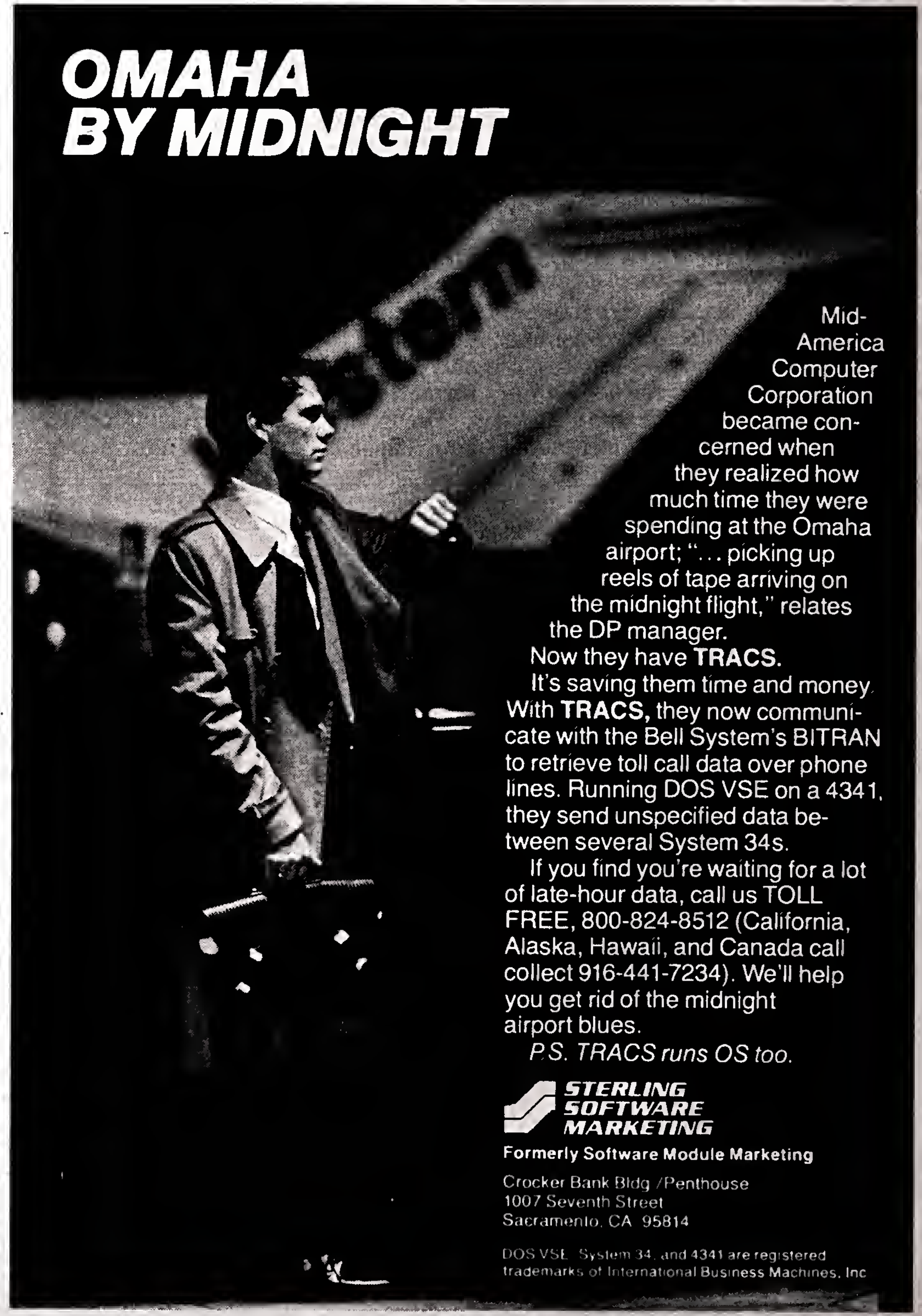

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Don't expect magic from packaged software

By John R. Wark
Special to CW‡

Applications packages have overcome one bad reputation — the not-invented-here syndrome — only to get another bad rap: Sometimes they fail, and worse. Sometimes they fail *and* use up a lot of time, money and people in the process.

There are many reasons for the failure of package solutions, but the reasons boil down to one simple truth: Packages are sometimes used to relieve an organization of its responsibility to do some aspect of the job of implementing an information system. But packages are not magic; they do not implement themselves, and they are not free from problems.

Many organizations find that applications packages are a valid solution to their information processing needs.

However, packages are not a panacea for the array of data processing problems to which they're often applied, such as multiple-year applications backlogs, shortages of skilled developers, long development lead times and the high cost of in-house development.

The following rules may help you avoid many of the mistakes and false assumptions that organizations make when choosing an applications package.

Analyze problem

Don't decide to buy a package until the problem has been analyzed. If you haven't gone through the analysis phase of the development cycle, how do you really know what kind of application needs to be developed? You can't solve any problem effectively until you know what problem you're solving.

There is a corollary to this rule: Don't assume the package vendor has done the analysis for you. It can be very comforting to think that the vendor has analyzed the problem. How else could the package have been created?

But the vendor has not analyzed *your* organization. You must answer these important operational questions: What procedures do you follow? How do you intend to modify them? What data do you use to operate your business? How do you define that data? You must know the answers if you are to make a good decision on which, if any, package is appropriate.

Make vs. buy

After this phase has been completed, you are ready to perform a make-vs.-buy analysis, and a third rule comes into play. Don't decide which package to buy until you are sure you need a package.

All too often a premature decision to buy a package is coupled with a decision to buy a specific package.

Consider all options, and perform a complete make-vs.-buy analysis, which will result in two decisions: That buying a package is either better or worse than in-house development and that, if buying is better, a specific package is better than the others and should be selected.

Wrong package

Don't assume a package will take less time, cost less money or require fewer resources. The wrong package, applied to the wrong problem, can waste enormous amounts of time and cost huge sums of money. Applications vendors can present any number of horror stories in which companies spend enormous sums of money and extended periods of time trying to implement the wrong package.

Also, don't assume buying a package relieves you of the responsibility to learn an application. Package acquisition is often viewed as a way

See **ANALYSIS** SR/8

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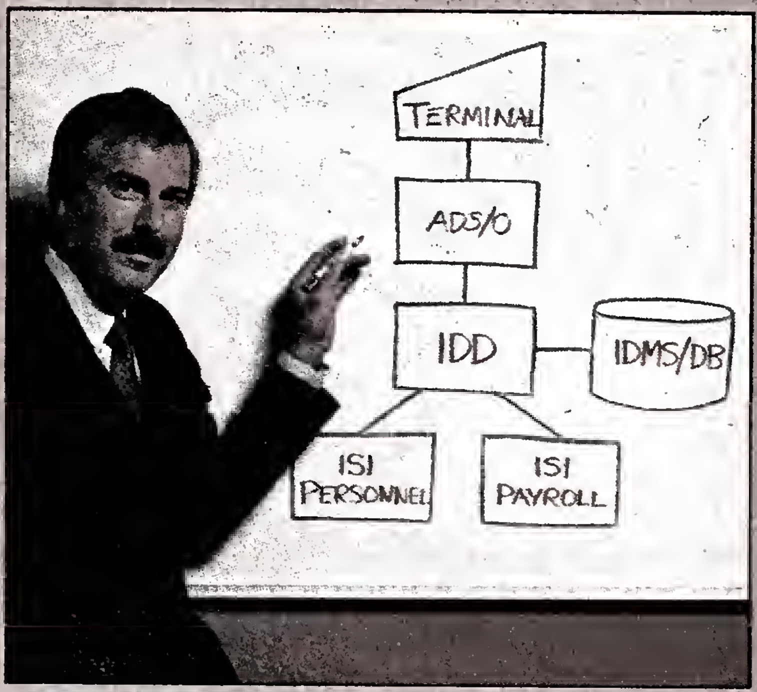

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Application myths hinder implemention

By Ravi Nayar, Gary Silvers and John Ward
Special to CW‡

In recent years, organizations have frequently turned to packaged software as a solution to their business systems needs, and industry experts predict this trend will continue well into the future.

While packaged software may offer significant benefits over custom-developed systems, organizations frequently encounter unique types of implementation challenges. The following are 10 common myths that have often hindered the implementation of packaged software.

Myth No. 1: Detailed implementation planning is a waste of time.

Organizations justify this belief by asserting that planning is unnecessary since the programs are already written. This is simply not true. Although the programs are written, all other tasks normally associated with systems development and implementation remain.

Further, the package implementation plan should be developed as more than just a checklist. It should include tasks, measurable goals, responsibilities and due dates. The implementation plan assists in measuring progress and is especially useful when specific tasks are not completed on time and revised target dates need to be established.

Myth No. 2: Support provided by the vendor will be sufficient to implement the system within the required time frame.

Vendors generally support their products well. However, unless the organization has contracted for a complete solution, where the vendor performs all aspects of systems implementation, the responsibility for implementing a successful system rests with the customer. This result cannot be achieved solely with vendor support because most vendors simply do not maintain the resources to support numerous implementations. User and DP involvement are required elements for a successful package implementation.

Myth No. 3: Since the programs are already written, nothing can go wrong.

Because packaged programs are usually written with optional features, everything can go wrong. Thus, many decisions must be made regarding utilization of these optional features. These decisions include developing classification schemes, reporting relationships, using report writers and screen generators, processing options, processing error rejections and ensuring security. User procedures should also be developed. The conversion effort itself involves many key elements, including building or converting files and developing data processing operating procedures.

Myth No. 4: If the package doesn't fit, modify it.

Before any decision is made to modify the package code, the organization should first determine whether the modification is truly necessary or is not implemented merely to install a nice feature that the old system happened to provide. If it is determined that a particular feature is required and would satisfy a legitimate business need, two alternatives to modifying the package should first be considered.

First, attempt to effect the modification through manipulation of the package's parameters and switches. Most packages have been designed to incorporate considerable flexibility through parameters, tables, switches and tools such as report writers and screen generators. If the requirements cannot be met with this approach, then consider a front-end or back-end approach as an alternative. This involves developing programs to perform the needed function external to the software package. The custom-developed programs either feed data to the software package or extract data from the software package.

Myth No. 5: Since a computer will be used, the DP department must be responsible for the project.

While active participation by the DP department is important, user involvement is more important. The user must feel comfortable with the package and all the related implementation decisions, because, in the final analysis, the package will become the user's system.

Myth No. 6: Since the programs are already written, only junior-level personnel need be assigned to the implementation project.

Junior-level personnel may be least suited for the implementation project. Typically these packages perform functions critical to the successful operation of the organization. Thus, decisions made throughout a package implementation will affect the way the business operates well into the future. It is important that supervisory-level personnel be actively involved throughout the implementation.

Myth No. 7: A project manager is not necessary.

A project manager, preferably from the user side, is an essential in-

See **MYTH** SR/8

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ANALYSIS

from SR/6

to cope with an inexperienced DP staff. Successful package implementation requires DP expertise in the applications area on how the package works and how it meets the needs of the organization.

Buying a package sometimes aggravates the problem of applications knowledge. You must not only learn how the organization works in the analysis phase, but also how the package works and how it can be adapted to the organization.

The problem of adaptation raises another issue. Don't over-modify a package. If you have to make significant changes to a package, it's probably the wrong package. Try to find a package that doesn't need to be heavily modified to meet your needs. Over-modification has many problems, including the cost of the modifications. Make sure you take this into account in your make-vs.-buy analysis.

Another important issue is who will make the modifications. If you modify the package at your organization, remember the cost of your time. If the vendor modifies it, make sure you add not only the cost for modification, but also the assignment of your staff to present your applications needs to the vendor.

Take into account the effect that changes have on vendor documentation. Also, be sure you understand the effect modifications have on vendor-supplied package maintenance and enhancements. If you are going to modify a system to the extent that vendor-supplied maintenance is no longer useful, that additional cost must be considered in your analysis also. Be sure you have carefully considered the implications of assuming the responsibility for all future package maintenance.

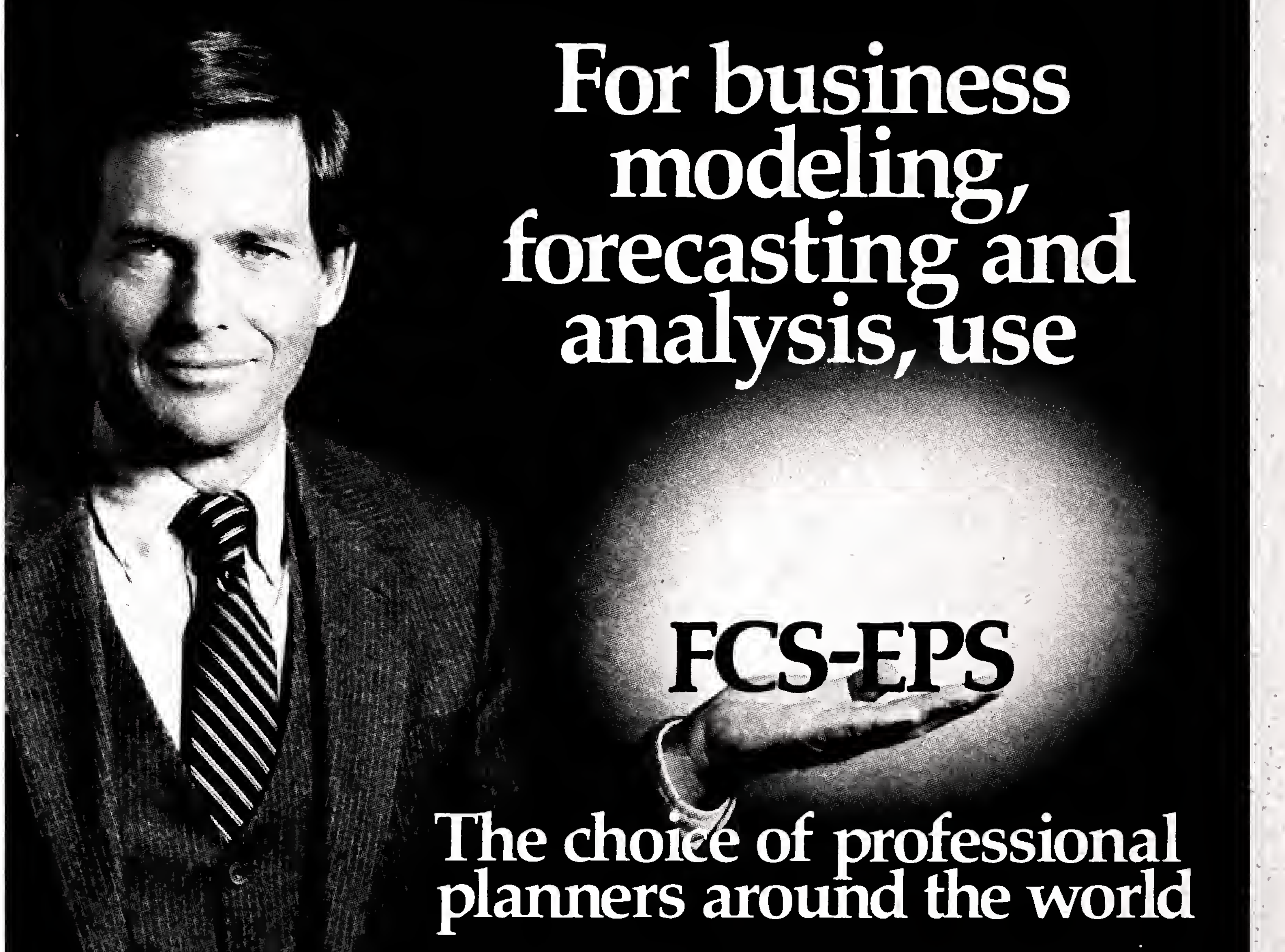
Don't ignore or underestimate the cost and time associated with education of users and the DP staff. Don't ignore education; you will pay the price eventually.

There can be other hidden package impacts that might not be immediately obvious. What effect does package acquisition have on data administration and efforts to build an integrated data base? The effects here may be subtle and the costs difficult to assess. However, you will pay a price down the road if a portion of corporate data is managed using tools that are incompatible with your other data bases.

Further, the data may not be controlled and secured consistently with your other data. Data from a key application may not be available through the set of tools you have provided to your users in your corporate information center. What price do you pay for not being able to integrate information easily from different vendors' packages to meet new business requirements?

The decision to buy a package involves hard work, careful analysis, an understanding of your organization and consideration of both short- and long-term effects. If approached correctly, a package can be a good solution to your organization's information processing needs. If approached incorrectly, a package can create problems as bad as or worse than the crisis it was intended to avert.

Wark is vice-president for technology and co-founder of DBMS, Inc. of Naperville, Ill.



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MYTH

from SR/7

gredient for a successful package implementation. The project manager should, at a minimum, serve as an overall coordinator for the project, providing a single point of focus to direct and monitor the project resources.

Myth No. 8: Vendor training is not necessary.

Organizations often wrongly assume that the personnel assigned to the project are experienced in systems implementation and thus don't need any additional training or that vendor-supplied documentation can be used effectively on a self-study basis. As a result, vendor training is sometimes sacrificed in the contract negotiation process.

While vendor-supplied documentation is generally complete and accurate, it is normally intended to serve as a reference tool, supplementing the education available from the vendor. Documentation should not be viewed as a substitute for education. Project team members should receive vendor training, preferably at the vendor's education center.

Myth No. 9: Since the package is installed at hundreds of other companies, a systems test is not necessary.

A systems test is the test performed when the software is physically installed or loaded onto the computer. It should be performed because there are often installation-dependent factors that may make the DP environment unique. The vendor should be present at the time the systems test results are reviewed in order to help validate the results. Don't assume the system will install clean just because it is a package.

Myth No. 10: Since a systems test with vendor-supplied data has been performed, additional user-defined acceptance tests are not necessary.

User-defined acceptance tests are also a crucial ingredient for successful package implementation. The acceptance tests should be conducted after all parameters have been determined and installed. This will ensure that the package will perform the required functions in a manner acceptable to the organization.

Nayar, Silvers and Ward are managers in the management advisory services group of Deloitte Haskins & Sells.

Use business sense when evaluating packages

By Arthur Willner
Special to CW‡

Application software packages exist to enhance, expedite and automate the processing needs of end users.

The reasons to buy and use an application package are time, money and effectiveness. Compared to the chief alternative, a custom-developed system, an application package can be up and running much sooner at a lower cost than a large development effort. The drawbacks are doubts about satisfying the company's particular needs, adaptability and the unknown factors that lie between promise and reality. These are all pragmatic considerations, but packages are often evaluated, selected and implemented in non-business-like ways that obscure their purposes.

Users typically go through a number of stages, including frustration and incapacity with their current system, justification and persuasion for a new system, hard work at coping with the old while contributing to the new and lots of waiting and placation while waiting for the shiny new system. Excessively high expectations can't help but lead to dissatisfaction and disappointment.

Rigorous efforts

The rigorous efforts involved in identifying and defining system requirements portend a product that will answer all of those needs. Packages are often sought because the scope and complexity of the needed system cannot be developed and delivered by in-house DP within a tolerable time frame. However, to expect a package to meet all requirements is folly. Packages are generalized software adaptable to many users, environments and needs. Because they are marketed widely, they are inherently less functional than in-house systems. They represent a compromise wherein a company foregoes some of its requirements to get a functioning system operational sooner.

Determining how much to forego with a package is an individual decision. As a yardstick, though, a good package should meet 90% to 95% of a company's requirements. An additional problem concerns the speed of implementation. In the back of most users' minds is the expectation that a package will be up and running immediately. This is unrealistic considering the time-consuming labors of loading data, learning the product, establishing procedures and controls and acclimating the staff to the product.

The decision to buy or investigate packages often breeds long, drawn-out analyses replete with committees and meetings. Vendors are analyzed, scrutinized and visited, the charter being to find the one and only package that's best for the company. Evaluation is a vital task and needs to be done well. If one package is clearly superior, that should be evident. Packages compare like most products in that they usually have contrasting advantages and disadvantages, so there often is no one package that is just right — yet many that will be suitable.

Prolonging evaluation exemplifies the law of diminishing returns in regard to time, the most precious commodity. This is time management, pure and simple. Don't forget the cost in labor of all those people at all those meetings. In cases where the choice is to build or buy rather than which to buy, the same warning applies with an added guideline: In-house development should be chosen only when the requirements are highly specialized.

Price is often an issue, not so much because of the expense itself but as a justifica-

See EVALUATE SR/10

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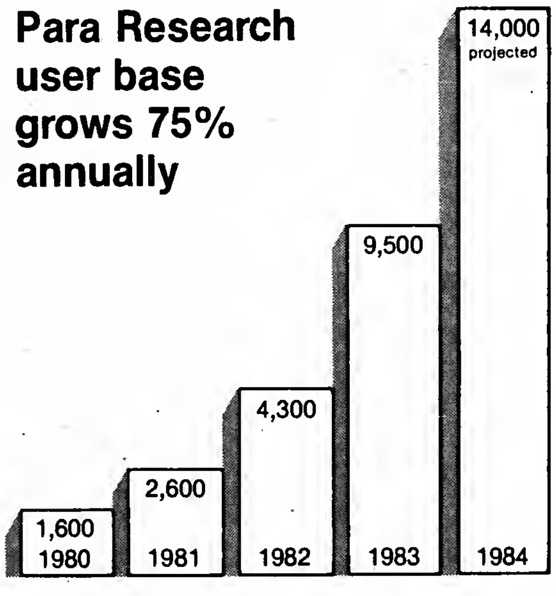

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System helps valve maker control inventory
Percentage of orders filled on time skyrocketed

June Woolsey accounts for storeroom contents.

Source: Crane Co.

> "Because the new system makes problems visible, we now use the information it provides in monthly planning meetings with the divisions. Each division knows what inventory the other has on hand and plans accordingly. — James Pool, plant master scheduler."

ROGERS, Ark. — Inventory accuracy and the percentage of customer orders filled on time have increased dramatically, while the dollar volume of aggregate finished goods and component inventory has plummeted since the Crane Co. implemented a new manufacturing system in its plant here.

Crane, a division of the Valves and Fittings Division of Crane USA, manufactures bronze, stainless steel and iron valves. Before Crane implemented the new software package, all of its manufacturing records were kept on cards and updated by hand. Workers pulling parts for a rush order sometimes forgot to account for them on the card file. And if a card was lost, the entire record was lost.

Mistakes caused huge inventory buildups at Crane. Often the purchasing department reordered an item simply because a vendor was giving a price break. "The inventory was unreal," Mirian Von Struble, purchasing manager, explained. "There was a 64-year supply on some things. And there were always missing items. We had no control."

In addition, she said, parts were not inspected as they were received from vendors. "We spent many hours just retooling parts so we could use them," said Bill Wells, machine shop general foreman.

In 1979 Crane USA approved a plan to implement a Material Requirements Planning II system at the plant here. In December 1979, Management Science America, Inc.'s Manufacturing System was selected.

We wanted it straight off the shelf — plain vanilla," said Robert Holiman, who was responsible for evaluating and selecting the software. "We also wanted every module they had to sell."

Once the system was chosen, Crane created a steering committee to establish business procedures compatible with the new software. One of its most important tasks was to create ironclad operating procedures and controls.

Under the new procedures, products would no longer be built without an engineering bill of material and specific manufacturing standards. "We can now provide accurate bills of material that truly represent the way the product is supposed to be built," Joe Weber, engineering manager, maintained.

The parts stockroom was another department where new procedures were implemented. "Now, there's only one way to put the inventory in and one way to take it out," Holiman said.

The receiving department also made changes. Employees are now issued drawings of each part ordered, and parts that do not match specifications are quickly rejected. As a result, suppliers no longer send unsatisfactory parts, Holiman said.

Plant Manager Russell Dutton said the change has had a ripple effect on the rest of the company. "In the assembly department, there are always matched sets of parts when they begin assembling a product," he said.

And in purchasing, according to Von Struble, "We're able to respond to the needs of production much faster now."

Crane's inventory has shot up to 95% accuracy, and the percentage of customer orders filled on time has doubled. Holiman, who became materials manager for Crane when implementation was complete, said Crane reduced its aggregate finished goods and component inventory from $8.5 million to less than $5.1 million in two years.

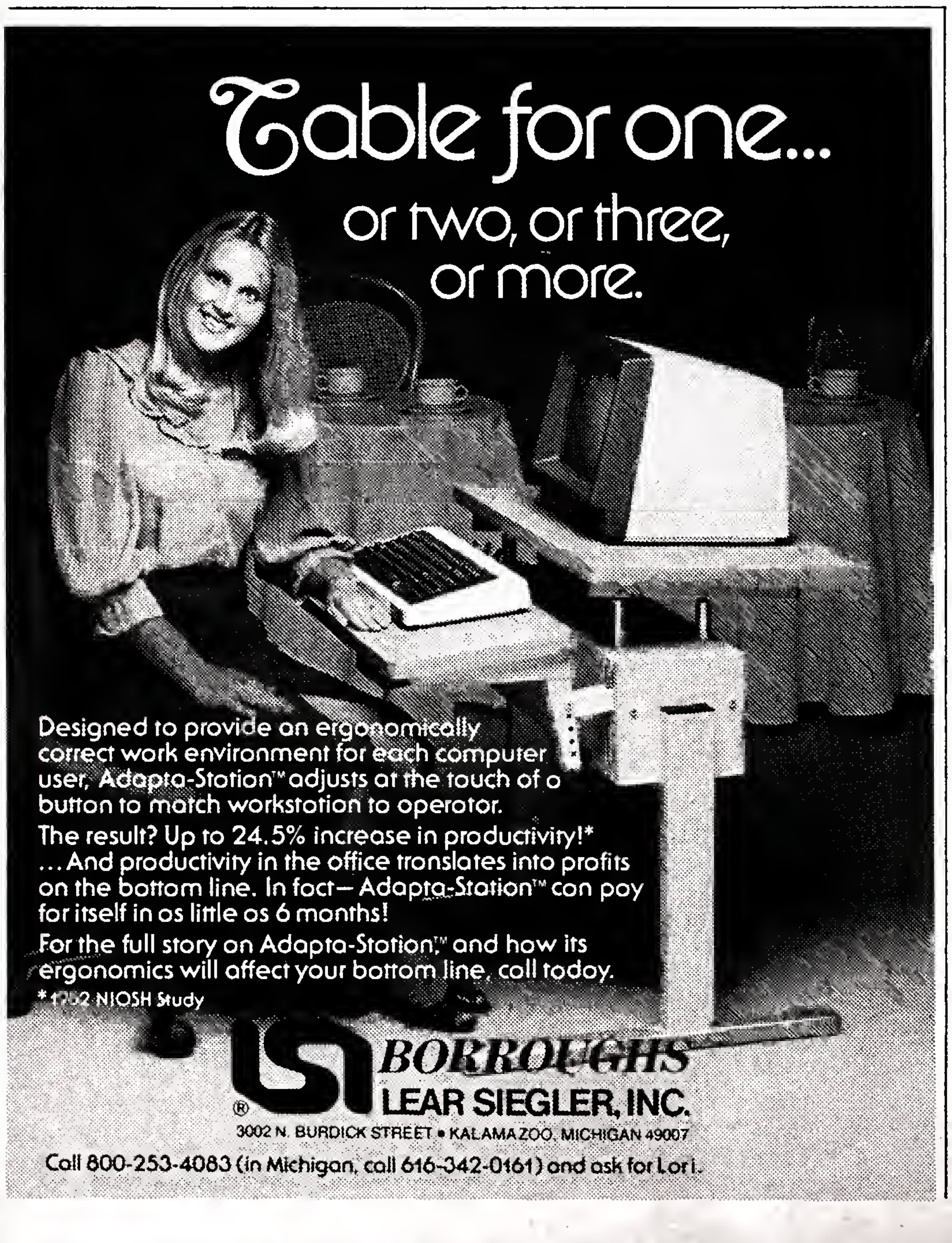
He attributed part of this improvement to Crane's review of its product line. With the new system, management was able to spot inventory that was not moving, and some of the products were either consolidated or discontinued.

Holiman said it is also simpler to maintain inventory with the new system. Stock receipts, for example, have been reduced from four documents to one.

The final challenge was to communicate the information to Crane's other divisions in different parts of the U.S. "Because the new system makes problems visible, we now use the information it provides in monthly planning meetings with the divisions," said James Pool, the plant's master scheduler. "Each division knows what inventory the other has on hand and plans accordingly."

Now, he said, Crane stays within 10% deviation from the master schedule, predicted production hours and sales forecasts.

Moreover, Holiman said the company is no longer caught by surprise with unexpected problems. "We can see problems ahead of time, and we can actually do something about them," he said.



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EVALUATE from SR/9

tion for spending cash vs. authorizing in-house labor on applications software. Most companies are not accustomed to buying application software, and management often requires greater justification for what seems to be a large cost item. But when compared with mainframe hardware costs and the alternative of in-house development, application packages are often a good buy. Cost analysis is a key management task, yet basic business management often is forgotten when dealing with the new concept of buying application software.

Packages should be evaluated for functionality and effectiveness. Technical considerations, state-of-the-art factors and efficiency are not unimportant considerations, but they are secondary. What a system does is far more important than how it's done. Users often turn to DP for guidance in evaluation and selection and get an inverted prioritization — technical over functional. The tail is wagging the dog in such cases. User departments are responsible for the data in a system and, therefore, should be responsible for the means of processing that data.

The problems described above are not common to all package users, yet they are typical and frequent. What is common to all of them is that they can and should be dealt with as management problems. The newness of buying application software or the seemingly esoteric complexities of a computer product should not be an obstacle to exercising pragmatic judgment, common sense and sound business management. As users become more proficient in managing data and computerized systems, they will find they have made room for whatever new business problems are out there awaiting them.

Willner is vice-president for development for Genesys Software Systems, Inc. in Lawrence, Mass.

More and more, personal computers in large organizations are dramatically improving productivity. But there's also a problem involved with this improvement. People are using many different, often incompatible microcomputers, yet they still need to share information, programs, and peripherals.

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System spices up restaurant's info exchange

With financial software, micro-to-mainframe link

PLEASANTVILLE, N.Y. — Application integration with microcomputer-to-mainframe linking capability was the answer for the daily corporate information requirements of Pizza Hut, Inc.

Pizza Hut, a leading pizza restaurant chain, recently upgraded its existing line of McCormack & Dodge Corp. on-line products to include McCormack & Dodge's recently released Millennium series.

Millennium offers an on-line, integrated systems application environment that incorporates uniform structure and consistent features across all applications, according to a spokesman. This common structure, based on generically defined program functions and reusable code, provides borderless query across all applications, real-time design and update of screens, on-line security to the field level and the optional interactive PC Link, allowing IBM Personal Computer-to-mainframe information exchange.

Now in its 25th year, Pizza Hut has shown healthy growth rates. The chain has restaurants in all 50 states and in 16 foreign markets, and management predicts the company and its franchises will build a minimum of 200 restaurants per year for the next five years.

In 1979, Pizza Hut replaced all financial systems and accounting functions for its 2,000 company-owned restaurants with McCormack & Dodge software. Beginning with the G/L Plus general ledger system in 1979, Pizza Hut has purchased the A/P Plus accounts payable system, F/A Plus fixed assets system, CPA Plus, capital projects accounting system, H/R Plus human resource system and P/O Plus purchasing information system.

DP requirements

To accommodate data processing requirements that include up to 700,000 journals and 450,000 general ledger master file records, Pizza Hut maintains an IBM 158 and an IBM 3033 running under IBM's OS/MVS operating system. It is now awaiting delivery of an IBM 3081.

Ed Dreher, senior financial project leader for Pizza Hut, reports the company first became interested in the Millennium technology at the 1982 McCormack & Dodge User Conference in New Orleans.

In April 1983, Dreher went to McCormack & Dodge's headquarters in Natick, Mass., for a Millennium demonstration. "From that point on, we wanted to get up on the system as soon as we could," Dreher said.

Millennium's on-line capabilities, borderless query and PC Link were primary considerations for Pizza Hut, Dreher said. "With Millennium, we plan to decrease our closing schedule, partially because of the online posting feature," he said. "But also, because of the flexibility of the borderless query, we anticipate not having to run as many batch reports for closing.

"Millennium provides more accurate financial data," he added. "With the on-line, real-time update and query, we are able to see where we are now, as opposed to using data from the batch reports, which may have run the prior week."

Daily reporting requirements also will be reduced, Dreher noted. "For example, we ran on-request Auditor [report writer] reports with our G/L Plus system, as well as daily requests for accounts payable, fixed asset and capital project information. Most of these requests should go away with Millennium's on-line inquiry," Dreher said. "We estimated that we spend a fair percentage of time researching one-time inquiries from our field offices. With on-line inquiry, they can look into it themselves."

Millennium's on-line Help documentation was another selling point, Dreher said. "It really talks you through the system. Also, Secure, the multilevel security system provided with the package, gives us the extra security to let us send a lot of functions out to the field offices. Previously, we didn't have the security to let our offices get into that information." With the PC Link, Pizza Hut's field offices can use the microcomputer as a terminal and can do spreadsheet and budgeting at the regional level.

Interacting with non-McCormack & Dodge files is another important facet of Millennium for Pizza Hut, Dreher said. "For example, in our internal systems, we have a hierarchy of Pizza Hut reporting relationships," he noted. "With the foreign file feature of Millennium, we can give our people access to this data without having to write a special online inquiry system."

Pizza Hut plans to use a delivery scheduling system using the PC Link to access its order file. After downloading restaurant order information to the Personal Computer, the data can be used for order delivery. Another tentative plan is to use the system to bring in time sheets electronically from the field offices, he said.

"We also can see using the [PC] Link for consolidations," Dreher said. "We download the financial data to the [Personal Computer] and perform the consolidations there. Currently, consolidations are a man-

See **LINK** SR/14

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Single-vendor purchases can lead to horror stories

By Woodrow W. Chamberlain
Special to CW‡

There is really no need to document the advantages of using packaged software solutions.

In addition to the reduced time factor and cost considerations, the introduction of packaged software often helps to prevent new systems from being introduced which simply automate "business as usual."

However, a dangerous syndrome has been slowly developing within the DP organization relative to application software. It is the feeling that the best option available to a company is to "get the complete solution" from a particular vendor.

More than applications

To support this notion, a variety of vendors exist in the software business today that provide not only application packages such as financial and manufacturing systems, but also complete data bases, decision support systems and micro-to-mainframe links.

The clear-cut message of these vendors and the people who select them is that the up-front integration of a variety of software packages is of more value to the business than the individual functional excellence often provided by independent and separate software application vendors.

This reasoning is both specious and dangerous, since it shortchanges the decision makers in regard to the richness of information that can be provided by purchasing the best functional package available.

Problem is minimal

In truth, the problem of integrating a variety of today's packaged software is minimal. A DP organization that subscribes to the "purchase from one vendor" philosophy is reliving past horror stories about package integration that are no longer valid.

The one-vendor selection provides a more modern horror story. Specifically, it denies user functionality and organizational flexibility in the future because the marriage to a major vendor often results in a continuing erosion of reasonable alternatives.

This loss of flexibility, which is vital to the success of most businesses, cannot be overlooked. DP managers should always make selections based on maintaining maximum flexibility in the event that new technological developments occur. The single-vendor alternative commits a company to the fortunes of a single vendor and suggests that one vendor will be capable of maintaining state-of-the-art knowledge in all areas — an unreasonable supposition at best.

See **VENDOR** SR/14

New acquisition criteria spurring software changes

By John Donnelly Jr.
Special to CW‡

The most dramatic change in applications software packages in two decades has occurred recently with the emergence of new acquisition criteria. Functional comprehensiveness and degree of functional fit with the acquiring company had been, in many cases, the sole determining factors.

The new criteria are related to the software technology used to implement the system. Senior management will no longer tolerate applications systems that are incompatible, nonintegrated, expensive to maintain and difficult to enhance.

Management is looking beyond functional capabilities at any one time to an information strategy that allows applications to work together as a single system, to be tailored to meet unique requirements, to be implemented separately and to access application data for decision support. Above all, this strategy allows one set of software code to satisfy the diverse requirements of all operating departments and all levels of management.

Some of the specific criteria are as follows:

■ *On-line real-time* — The application must be built on advanced data base performance terminal networks and automatic backup and recovery for data integrity.

■ *Horizontal Integration* — All applications systems must work together automatically and be driven by one common data base. The order entry and accounts receivable systems use a single customer data base. The purchasing and accounts payable systems use a single vendor data base. Cash disbursements in accounts payable automatically generate the journal entries for the general ledger.

■ *Vertical Integration* — All applications systems are driven by a user-controlled application dictionary and developed using advance data base tools, such as a fourth-generation language, a report writer, a query language and information network methodologies.

■ *Information Center* — Application end users must have information center capabilities so they can generate their own reports, perform their own ad hoc queries and download summary or detail trend data directly from the application data base to a personal computer.

■ *Decision support systems* — Applications systems must be integrated with an intelligent personal computer-to-mainframe link. End users must have the ability to access the application data base directly and then perform analysis and modeling without having to enter any

See **CRITERIA** SR/14

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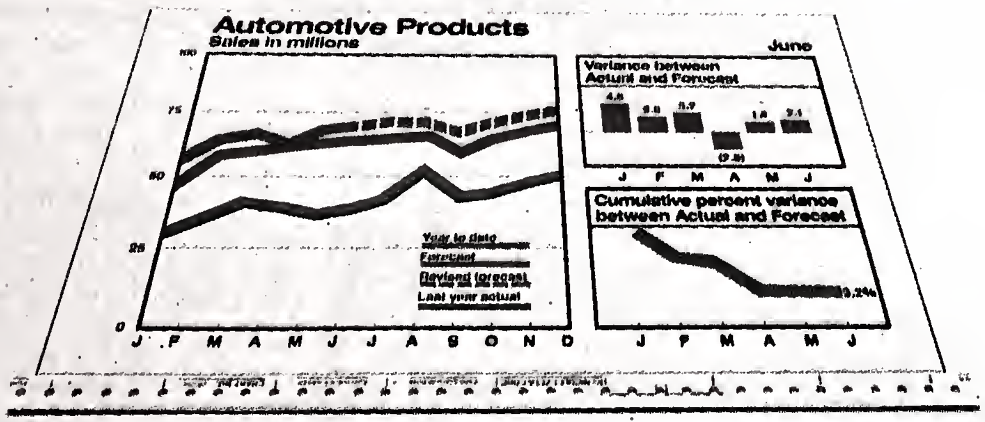

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VENDOR from SR/13

Carried to its logical extreme, if every manufacturer was to select all its application and operating software from a single vendor, then we could expect the world in the future to have one computer vendor, one software vendor, one car manufacturer and so on.

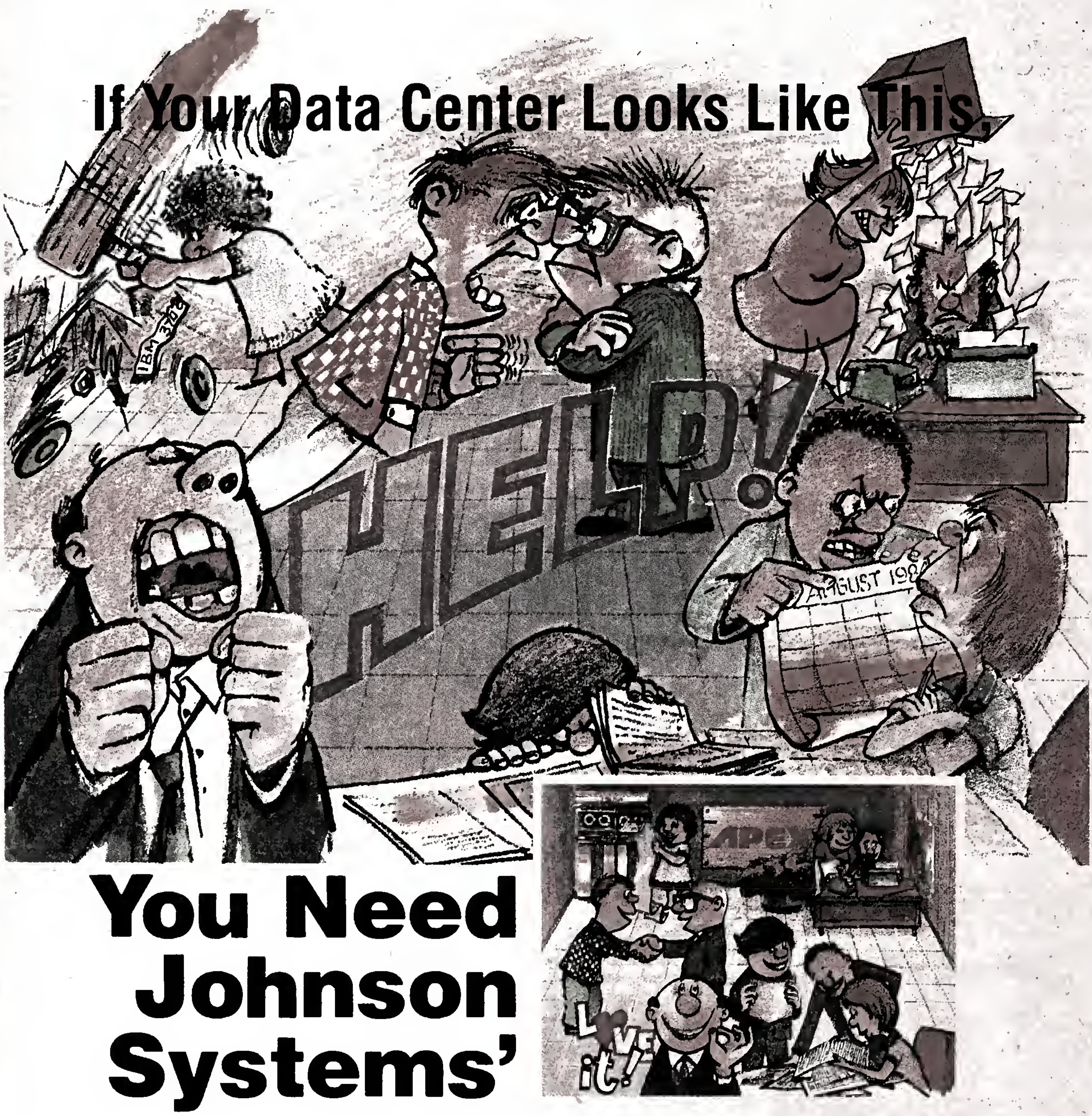
The nurturing of new developments and new products can only be realized by farsighted managers capable of making a decision to select the best products available on the market, forcing the industry to provide state-of-the-art products while allowing a maximum competitive posture in the international business scene.

The key question is why should data processing managers looking at application software behave any differently from their counterparts in computer operations?

They shouldn't, unless they want to be remembered as lacking the vision and the competence to select the right product at the right time, while constantly maintaining the maximum number of options for their organization.

Chamberlain is president of Rath & Strong Systems Products, Inc.

> *'This loss of [organizational] flexibility, which is vital to the success of most businesses, cannot be overlooked. DP managers should always make selections based on maintaining maximum flexibility in the event that new technological developments occur. The single-vendor alternative commits a company to the fortunes of a single vendor and suggests that one vendor will be capable of maintaining state-of-the-art knowledge in all areas — an unreasonable supposition at best.'*



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CRITERIA from SR/13

data redundantly or learn programming syntax and file structures.

Evolutionary — The applications system must be structured so that new capabilities can be added without conversion of existing code. Future applications must be integrated horizontally without disruption.

Technology integration — The software foundation supporting the application must be built on an architecture that will embrace any new technology. For example, a manufacturing control system must be architecturally structured to allow future integration of bar code scanning, computer-assisted design and manufacturing, automatic testing equipment and so on.

Results — Senior management is demanding cost-effective information systems that generate measurable results. Application systems must be able to show quantifiable productivity gains, improved operations, market penetration and financial performance.

The best example of applications software that is being acquired based on the new criteria is manufacturing software packages. The manufacturing industry has found that there is much common functionality across companies within a particular industry segment and even across industry segments.

The recognition that computerized manufacturing information systems can be used to plan material requirements, control material movement, control production orders, reduce manufacturing lead times, reduce inventory and define common functionality has provided the basis for the manufacturing software packages that are now available. Today there are over 100 manufacturing software packages on the market. The problem is that very few of these packages measure up to the new criteria.

In the past there was a general perception that all manufacturing software systems were similar in design, development and technique of implementation from a software technology standpoint. If a package met all requirements, it was assumed the package would provide the tools necessary to achieve benefits.

Based largely on the disappointing results of the older systems software, evaluation teams have started considering the software technology that drives the manufacturing functionality. Manufacturing management realizes that manufacturing applications software is not limited to reporting on what has happened, but rather is capable of planning and controlling the tactical and strategic operations of the company.

Donnelly is director of public and investor relations at Cullinet Software, Inc., in Westwood, Mass.

LINK from SR/12

ual effort."

Pizza Hut will be using Millennium's inquiry to access balance sheet information, Dreher explained. "We review our financial data at the end of the period. The type of information we want is basically exception reports. We used batch variance reports before; now it's on-line and real-time." Dreher noted that with Millennium, he expects to reduce processing by 15% to 20% across the total financial systems.

Package implementation commands planning

By K. J. McMenemy
Special to CW‡

The lack of understanding of how long it takes to implement a software package successfully and of the kinds of resources needed to complete an implementation is a major problem many companies experience.

This lack of understanding has resulted in packaged software that has never gotten off the ground and packages that are implemented poorly, allowing them to operate to only one-tenth of their capabilities — sometimes with even less functionality than the system they replaced. It has also resulted in unfair criticism of the packages and their vendors.

Today's packaged systems are much more "user driven," meaning that people who use the application are actually designing and operating the systems. The benefit here is that one package can be general enough to satisfy the needs of many different companies, while it can be tailored by each company to meet specific requirements without programming changes.

Factors considered

When systems were developed in-house, people became aware of how much time and effort it took to design, build and implement a major system. Thus, these factors were considered in their planning. It was because of this awareness that people began to look for alternatives.

Software packages are sold as a fast and easy alternative to in-house development. That impression is aided by the claims of software vendors that their packages can be installed and running in three days. For your own protection, you must clarify the important difference between "installed" and "implemented."

"Installed" means that the software programs will reside on your computer, awaiting the information to make them functioning systems.

In other words, the programming and debugging are done. "Implemented" means that all information is loaded, all necessary interfaces have been programmed and tested, all systems and user personnel are competent in operating the system, all documentation is completed and the system has paralleled the old system to prove the validity of the functions and information.

As you can see, the terms are very different in their definition and, more importantly, in their impact on the purchaser. Therefore, it would be better to think of a software package as a means of eliminating only the time spent on initial systems design and programming, remembering that mass amounts of information must still be entered into the system.

Some suggestions that may help in planning for the implementation of a software package include:

- Prepare an implementation plan with realistic times, resources and targets.
- Have both data processing and application user resources dedicated to the project.
- The roles of individuals on the project team must be clearly defined, and regular meetings must be held to monitor progress.
- Make certain that the design is well thought out and documented and that everyone is in agreement before beginning.
- Know your application package. Get training and hands-on experience up front.
- Get outside help if it is needed, but never give up control of the project.

McMenemy is president of Kalon & Co., Inc., a Canadian firm specializing in financial systems software.

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Poor training renders packages worthless

By Kathy Czech
And Kathy Telban
Special to CW‡

The software package met all criteria to solve the company's business problems. It was purchased and installed, but no one used it. Could it be that no one was properly trained?

When packaged software is chosen, a criteria list is usually developed, and the software is evaluated against it. Buried somewhere in that list is training. A software package must be able to solve the business problems of a company, but without proper training it could be ineffectively used and worthless. To avoid this, training must be a primary concern in the evaluation process.

In order to evaluate training, you must know what your training needs are and what the vendor will supply. To determine needs, examine the way the package will be implemented in the organization. Who and what jobs will the package impact? A list of those affected might be very limited in scope for a programmer productivity tool or very diverse with an information center package. Not everyone will require the same training.

Once you are aware of the various types of training required, determine how the training is to be achieved. Some training may be provided through an in-house training department. If you do not have an in-house training department, consult the vendor or an outside consultant.

What vendor supplies

In either case, it is important to be aware of exactly what the vendor can and will supply.

Training supplied by the vendor is usually of the "one course fits all" variety. For noncustomized courses, it is imperative that you examine the course material and carefully consider factors such as the training media employed, the location at which the training will take place, the availability and scheduling of training, course objectives and costs.

If the vendor provides customized courses, your homework has been done for you. You are now prepared to discuss the impact of the product and what you perceive to be the training needs.

Training programs, like every good program or software package, have design documentation. This documentation should consist of a course outline, course objectives, prerequisites and the target audience. The outline will provide an idea of the topics to be covered, and the objectives should point to what the student will be able to do after completing the training. Objectives should be stated as measurable actions. If there are no course objectives, be wary of the vendor's claims. Further investigation may be needed.

Ask if the course contains hands-on workshops. Surprisingly, most micro training does, but few mainframe vendors include this. Check to see if the workshop will be relevant to the student's on-the-job use of the product. An insurance company employee won't benefit from solving a hands-on problem designed for the manufacturing industry.

Unique audiences

The training analysis may have revealed that the software package will be utilized by different types of employees. Make certain the course addresses each of these unique audiences. Some vendors have separate courses for each audience, in other cases the course has been modularized to accommodate them.

The content of the training program is important, but just as important is the way in which the material is presented. Ask the vendor which medium is used in training — overhead transparencies, video disks, videotapes or computer-based training (CBT).

Which materials are provided with the software package, and which represent extra costs? The vendor may supply initial training with an instructor on-site at no cost and then sell you a video or CBT package for retraining. Some vendors will even sell their overhead transparencies with instructor notes and guidelines. When considering CBT, video disk or videotape, make sure the medium can be run on your current equipment.

If free training is provided, ask what the limitations are. There may be only one free class. Ask about the class size: Is there a limit on the number of students allowed before a charge is added on a per-head basis? Also, if purchasing multiple copies of the software, ask if the initial training will be provided for each copy purchased.

If there are other sites that will be accessing the software at a central location, determine how remote training will be coordinated.

Training site

Ask where the training is conducted. Is it at your site, the vendor's education center or a hotel? There is a real trade-off between travel costs and a productive environment. An employee cannot be learning if he is constantly being pulled out of class to solve daily problems. Also remember that training conducted far in advance of the product installation is often wasted.

Remember that training costs money. Always figure this into the initial cost of product implementation. In fact, training can sometimes cost as much as the software package itself. If the average programmer earns $26,100 and there are 261 working days in a year, that programmer costs the company $100 per day.

For 15 programmers to be in training for five days the cost will be $7,500, a figure that does not include the additional cost of employee benefits.

Added to that sum may be the cost of vendor training itself, which can vary between $500 and $1,000 a day plus travel expenses if the vendor is not local. For five days, that amount could be between $3,000 and $6,000. This brings the grand total for training to between $10,500 and $13,500 — for just one course.

Czech and Telban are educational consultants specializing in customized DP course development and training for Dallas-based Educational Horizons, Inc.

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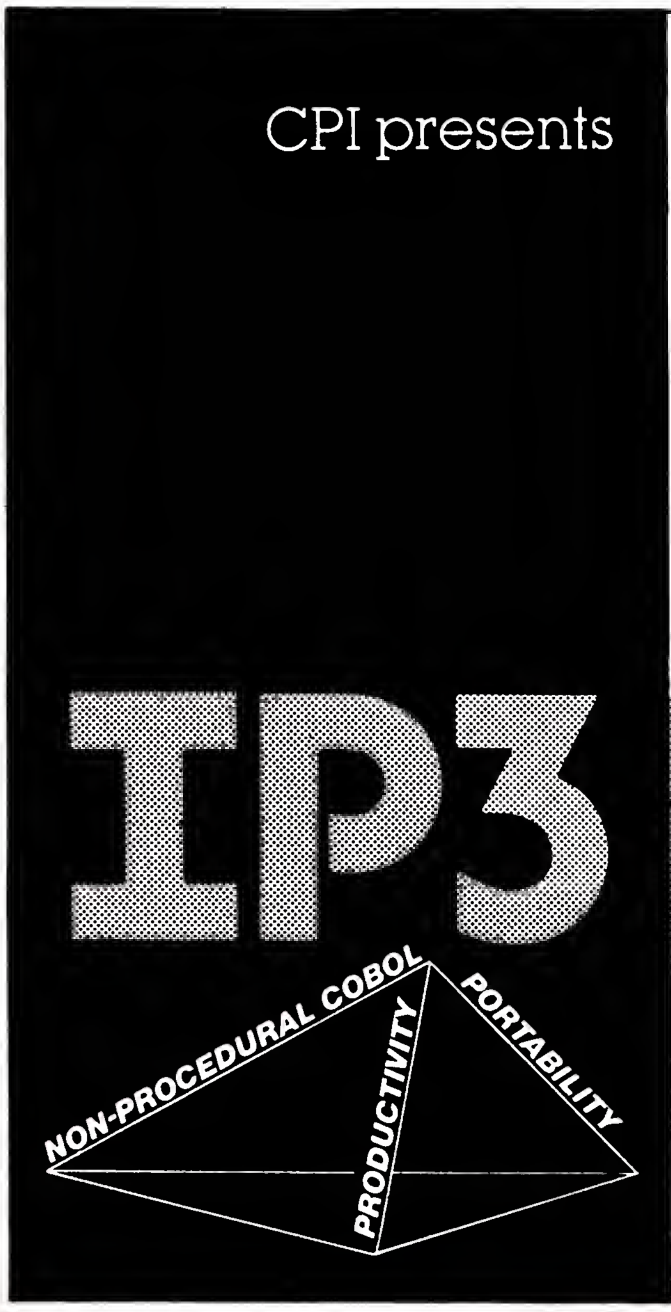

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Dr. George Schussel, *President, Digital Consulting Associates, Inc.* Dr. Schussel will lead the first day of the symposium, an intensive session covering fifty top data management products. Dr. Schussel is one of the best known and most widely respected lecturers on DBMS and 4th Generation Languages, having lectured before 12,000 professionals worldwide.

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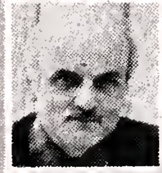

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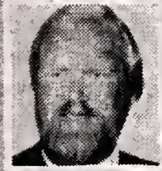

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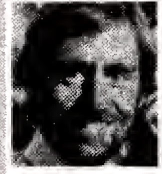

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Tool lets insurer cancel costly time-sharing

BOSTON — In the highly competitive insurance industry, sound planning and successful customer service are integral to a company's success.

So when Commercial Union Insurance Co. (CU) here replaced outside time-sharing services with an in-house, interactive computing facility, the company sought to reduce costs and respond more effectively to changing business requirements.

CU's goal was to find a product that would assimilate data for on-demand reporting, make projections for financial planning and perform sensitivity analyses to evaluate business alternatives and improve organizational performance.

After a careful evaluation, CU found that the ADR/Empire package from Applied Data Research, Inc. met its needs. "We were constantly having to constrain our analyses because of the cost of using a time-sharing service," said Steven Silva, manager of office information services for CU.

"With Empire, we can perform all the analysis required in-house, and we have a much more sophisticated tool than was available to us in the past. We still use external time-sharing, but only to supply us with external economic data which we bring in-house for analysis," Silva explained.

> "*Our organization requires an integrated approach to modeling that can only be achieved from a mainframe system.* — Steven Sparrow, manager of corporate planning systems."

CU has developed some 700 Empire models, which run on CU's Digital Equipment Corp. VAX-11 processors. More than 200 models are used by the Financial Reporting Department for financial statements and statutory reporting.

Models are also used for corporate planning, special risks, insurance plans, life insurance, R&D, telecommunications, tax, corporate accounting, analysis, expense budgeting, cost and expense, financial controls and financial systems. Financial planning reports that used to take seven people up to three weeks to perform are now done in a matter of days.

The first user of Empire at CU was the Corporate Planning Department. In one application, the department constructed a premium-and-loss model with a matrix of 1,100 rows by 130 columns.

The model uses data from offices across the U.S. and is designed to develop five-year plans to submit to CU's international headquarters in London. Output from the planning model is passed to a receivables model, which provides analysis of cash flow, income statements and balance sheets.

Models networked

The results are then passed to a policyholders surplus model. By networking the models, CU no longer has to gather and refine the information separately.

"To develop management plans requires a thorough review of the alternatives," said Steven Sparrow, manager of corporate planning systems. "Currently, we have 25 alternatives that we evaluate through the model using Empire's extensive "what-if" analysis tools. Using conventional programming methods or even microcomputers, we couldn't provide the same level of analysis to our management.

"The size and complexity of our organization requires an integrated approach to modeling that can only be achieved from a mainframe system," Sparrow contended.

In addition to using Empire in planning areas, the company is also using the package in its investment operation. Taking input from its investment brokers, CU can examine the effects of varying assumptions on the yields from its portfolio. With Empire's sensitivity analysis, the company can evaluate its exposure if earnings are not at the planned level.

"We know the data is correct with Empire because it is input on the terminal instead of being written down by someone in the home office," said Ron Breen, financial analyst in the Insurance Plans Department. "Calculations that use these numbers can be used in the models without fear of transcription error. This has saved my time and that of our managers and field people. Our expense allocation, which used to take a day and a half, is now completed in 24 minutes."

With the time saved by Empire, CU people are producing additional reports that aid management decision making by providing more intensive analyses.

"CU people who use Empire are becoming more creative," Silva said. "The bottom line is that, thanks to Empire, we are better able to assist users in identifying their business problems."

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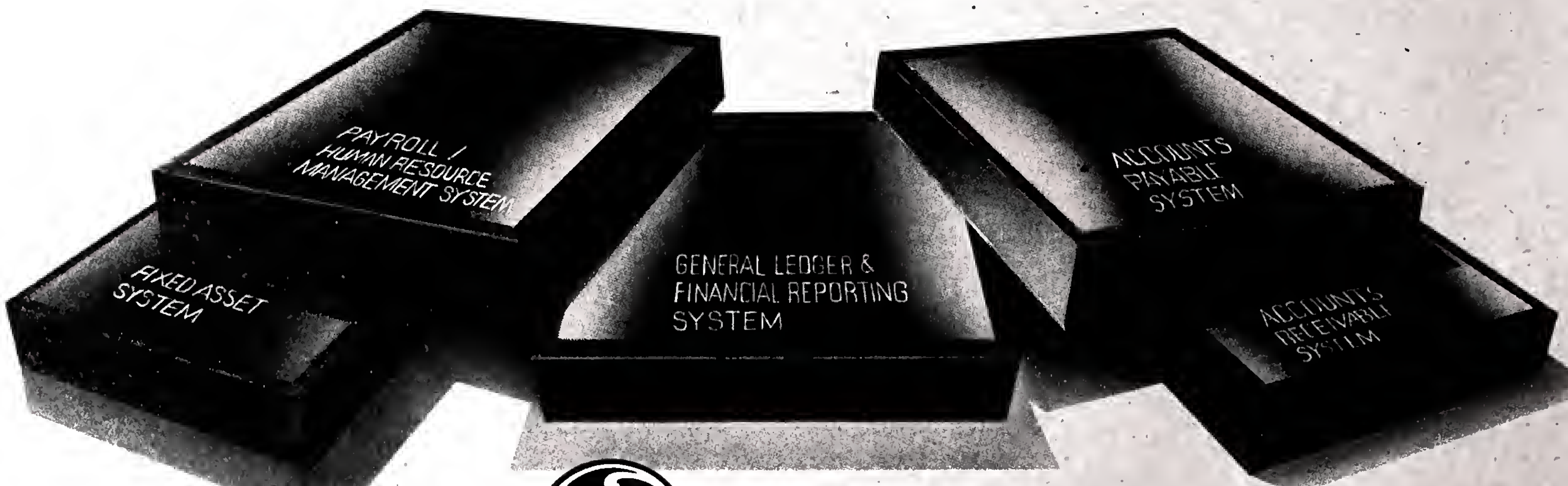
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Prototyping slashes insurance firm's backlog

Exploiting nontechnical personnel's creativity

NEW YORK — When Equitable Life Assurance found that it had a tremendous programming backlog, a productivity team began looking for something that would not only reduce the logjam, but enable nontechnical people to participate in applications software development and maintenance.

The company decided that a four- to five-year commitment was the only way to improve productivity in applications development and maintenance. And the only way to achieve sustained productivity would be through an integrated data processing environment, said Joe Esposito, project manager of Equitable's Applications Productivity Group.

Equitable's decision to go integrated led them to look at prototyping. "We wanted a single-window approach, where people could get into a lot of different things quickly and easily and where learning was very fast," Esposito said. "We found that a lot of programming aids were addressing only one particular aspect or another. We figured the least productive thing we could do was to get together a whole bunch of so-called productivity tools that were all totally different from each other."

Equitable chose Hogan Systems, Inc.'s Umbrella integrated applications systems for very large banking and savings institutions. "With Umbrella, we have the ability to develop a program with a layer in between so that we can manipulate the layer and not have to change the program when the data in the layer changes," Esposito said.

Umbrella is an on-line, transaction-driven active "process and data dictionary" for both batch and on-line processing, Esposito explained. It makes available an extensive catalog of software modules. "We can have one team of people writing Cobol code, another team using some of the Umbrella functions — such as editing processes — and a third team doing error codes," Esposito said. "They don't have to know what each other is doing, and they don't have to know Umbrella to use Cobol or know Cobol to use Umbrella."

System development

Development of a system becomes a matter of choosing the proper components, supplying parameters to tailor the components to the application, then integrating into the final system any programming that is unique to the application, he said.

The Umbrella system has three major components: the Processing Environment Manager (PEM); the Production Support (PS); and the Application Support (AS).

PEM isolates the application software from the hardware and the operating system so that applications are independent of the operating environment. It also directs the processing mode and functions to maintain and control the processing dictionary that stores transaction definitions, programs, work to be accomplished, data groups, data bases, logic flow, variable data and screen formats.

PS is a series of systems that provide services to the applications and control the processing of exceptions, centralized applications and cyclical transactions. It also provides audit control totals.

AS accomplishes four interrelated tasks: elimination of redundant programming, simplification of program maintenance, creation of application systems and reduction of the training requirements and skill levels necessary to create and maintain application system software, Esposito said.

"Our nontechnical people can put up all their own tables, their own edited format abilities and all their own error messages and maintain them," he said.

A by-product of Equitable's use of Umbrella has been increased creativity, he added. Umbrella has permitted Equitable to go ahead with new applications programs by off-loading some of the nontechnical work to users and concentrating the efforts of the technical staff on the new programs. What might have taken five years under the old programming methodology may take half as much time now, he said.

There has been some resistance to Umbrella by the technical staff, particularly from those programmers who want to increase their marketability by learning IBM's IMS, Esposito said. With Umbrella, however, IMS and CICS skills may not be needed, a factor many systems people don't like to hear.

"What they haven't come to understand yet is that the thinking process, the human logic behind the real skill, can never be replaced by Umbrella" he said. "But Umbrella has freed them from those nontechnical tasks.

"The integration of telecommunications and data base through this one system — to be able to get into the technical environments as well as straight sequential files — will be the most important task facing programmers in the future," Esposito said. "Prototyping will enable the user to have input into systems design. And if a programmer or user has spent a week working on a prototype, it won't be thrown away."

See **UMBRELLA** SR/24

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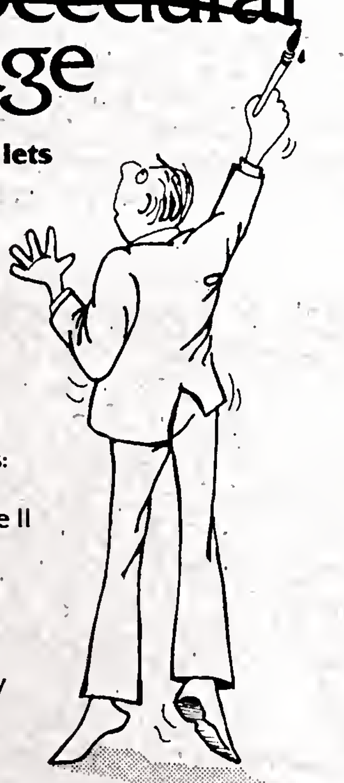

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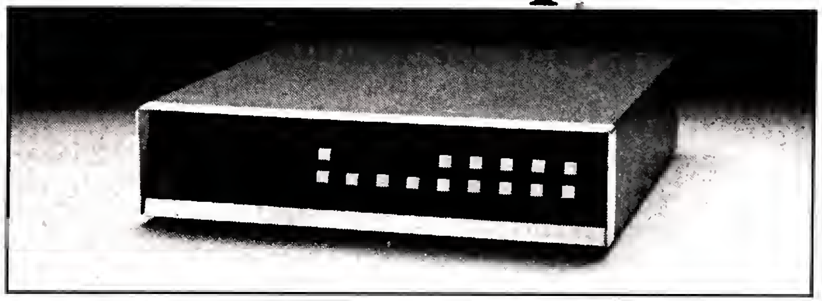

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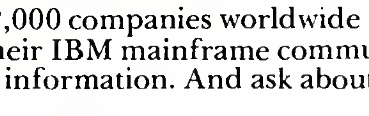

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System tracks utility's construction needs

By keeping tabs on unusual materials requests

SAN DIEGO — Engineers at the San Diego Gas & Electric Co. (SDG&E) are organizing and budgeting transmission-line projects more efficiently with the assistance of a materials tracking system.

Designed with SAS Institute, Inc.'s SAS and SAS/FSP software, the tracking system helps ensure the availability of supplies in the right quantities for complex transmission-line projects. The system works toward reducing project delays and ensuring sufficient energy transmission.

Transmission-line projects often require large quantities of unusual materials. Engineers at SDG&E thus named their SAS-based tracking system the RUM System, an acronym for requests for unusual materials. Using the RUM System, users can document and track material requests and immediately identify the status of materials necessary for transmission projects prior to the construction phase.

Developed in three stages

The automated materials tracking system was developed in three stages. The first stage involved defining the data requirements for the system. These requirements were identified from the company's existing manual materials systems.

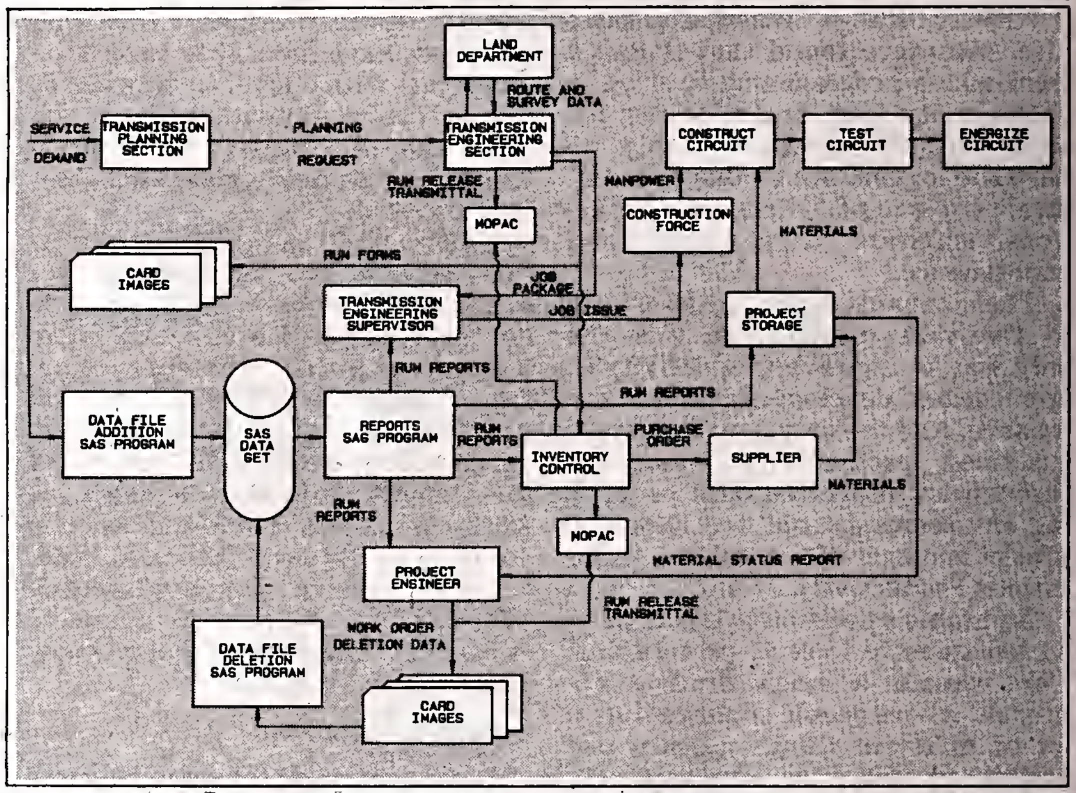
The second stage focused on the design of the data entry forms. The third stage was devoted to developing the software and procedures for updating and maintaining the data base. The computer language for the materials tracking system was also selected during the third stage.

SAS was chosen as the development tool for the RUM System because of its high-level language capability and its comprehensive file-handling and report-writing facilities, according to Dr. Roger B. Glaser, senior management analyst at SDG&E.

> *Designed with SAS Institute, Inc.'s SAS and SAS/FSP software, the tracking system helps ensure the availability of supplies in the right quantities for complex transmission-line projects. The system works toward reducing project delays and ensuring sufficient energy transmission.*

SAS/FSP and the addition of the Relational Algebraic Query Language (RAQL), developed for SAS at McGill University, add flexibility to the RUM System.

With SAS/FSP, users can edit and query the RUM data base in full screen mode. RAQL was initially used in the delete step, replacing a SAS Merge with a Minus operation.



Transmission-line project life cycle with RUM System. Source: SDG&E

The RUM data base is currently being reviewed to determine if it would be feasible to restructure it in a relational format, thus allowing greater query flexibility with RAQL.

Prototype model

SAS enabled the modeling of the prototype system in a timely and cost-effective manner, according to Glaser. Card images of the material data from the RUM forms are stored as an OS file for input into a SAS program.

This program adds the new materials data to the SAS data set, which serves as the data base for the RUM System. A second SAS program uses formatted output and Macro definitions to produce the RUM System's customized reports. These reports display the source data sorted according to the information needs of the report recipients.

"The RUM System was developed easily with SAS, and it exemplified the language's potential to increase productivity," Glaser stated. Consequently, a SAS training program was developed at SDG&E to encourage further employee productivity in many SAS applications.

"The SAS-based materials tracking system has also promoted communication between the diverse segments of SDG&E that contribute to the successful completion of a transmission-line project," Glaser said.

"Reports from the RUM System have encouraged use of a common vocabulary, which in turn has reduced the possibility of misunderstandings between project participants," he said. "Other groups within the company with similar project responsibility are recognizing the RUM System as useful for their own materials tracking requirements," Glaser added.

At this time, SDG&E is purchasing a companywide material management information system. The company plans to use the graphics and statistical analysis capabilities in SAS for the new automated system.

Report No.	Primary Sort Field	Secondary Sort Field	Tertiary Sort Field	Distribute To	Exhibit
1	Stock Number	Work Order Number	(None)	Inventory Control, Project Storage	6
2	Date Required	Stock Number	(None)	Inventory Control, Project Storage	7
3	Designer	Work Order Number	Stock Number	Project Engineer, Project Storage	8
4	Work Order	Stock Number	(None)	Transmission Engineering Supervisor, Project Storage	9
5	Date Issued	Work Order Number	Stock Number	Transmission Engineering Supervisor	10

RUM report sort fields, distribution and exhibit reference number. Source: SDG&E

UMBRELLA

from SR/23

Umbrella also affects maintenance, Esposito said, since it enables the rewriting of systems that might not have been economical or practical in the past. And it will have an impact on development center technology where the considerations of hardware, software and people come to bear.

"You're putting your technical programmers where they're most needed — on the technical jobs," Esposito said.

"You're writing programs that are easily maintained or changed when necessary, and when they're changed, the alterations are across the whole system."

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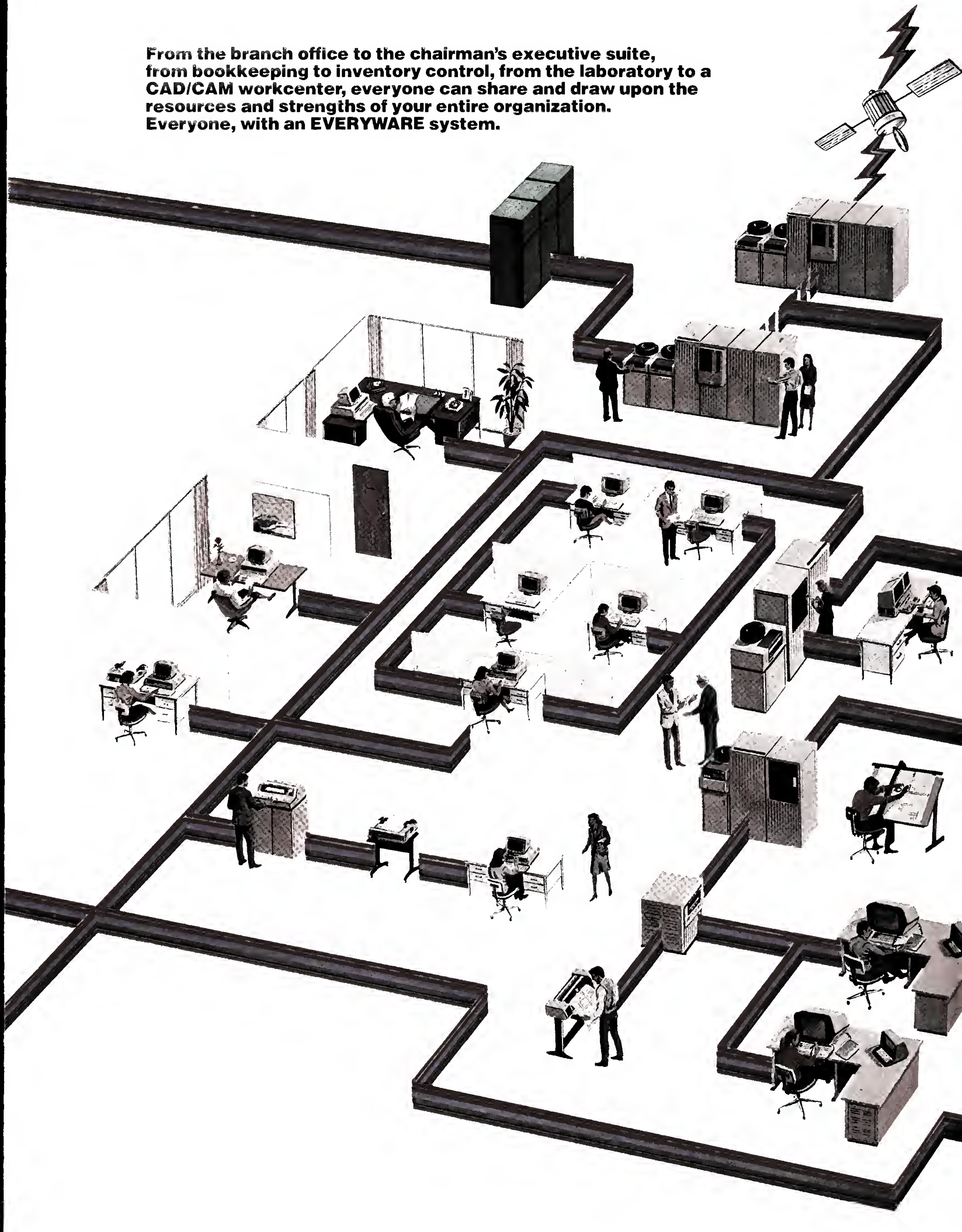

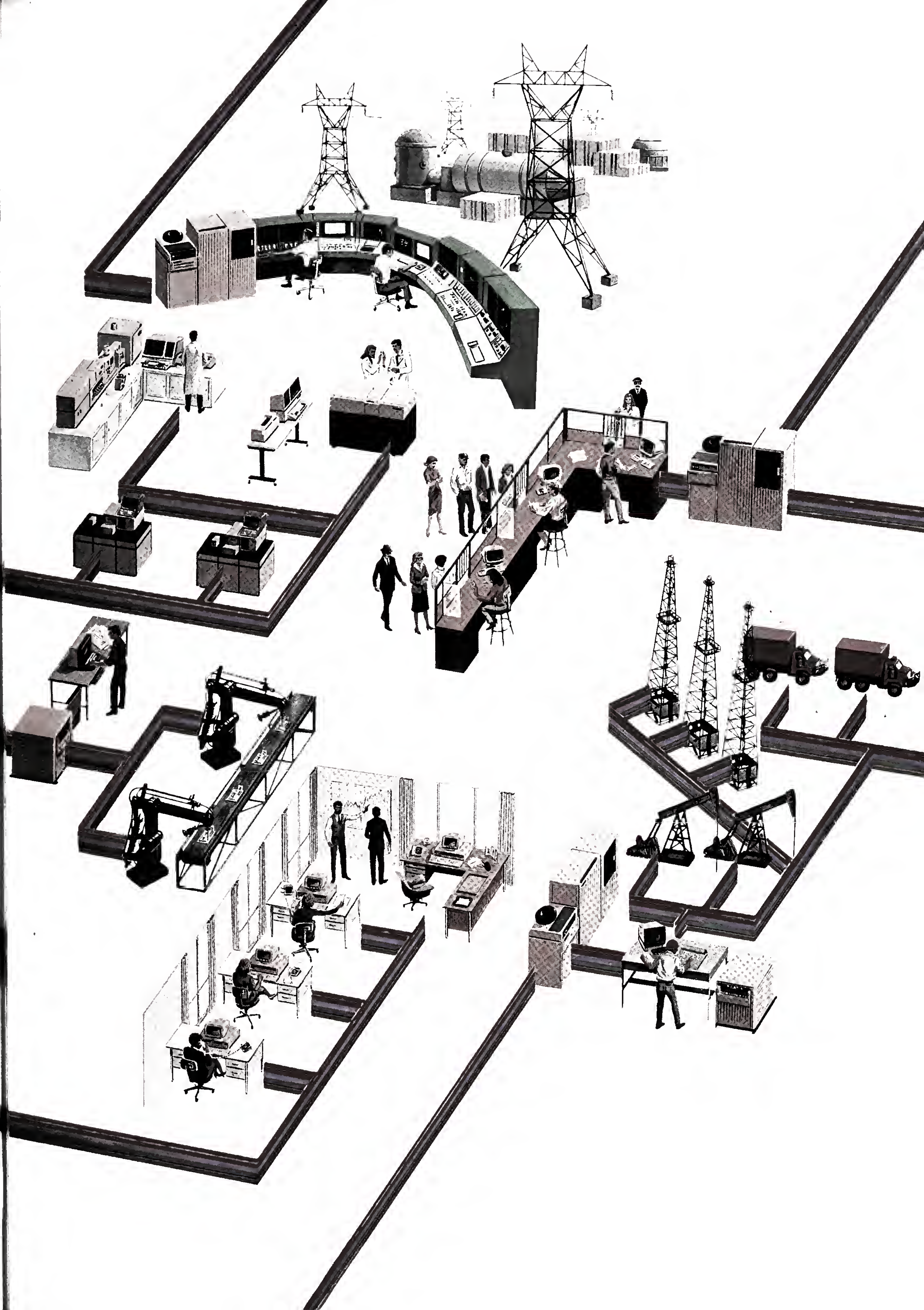

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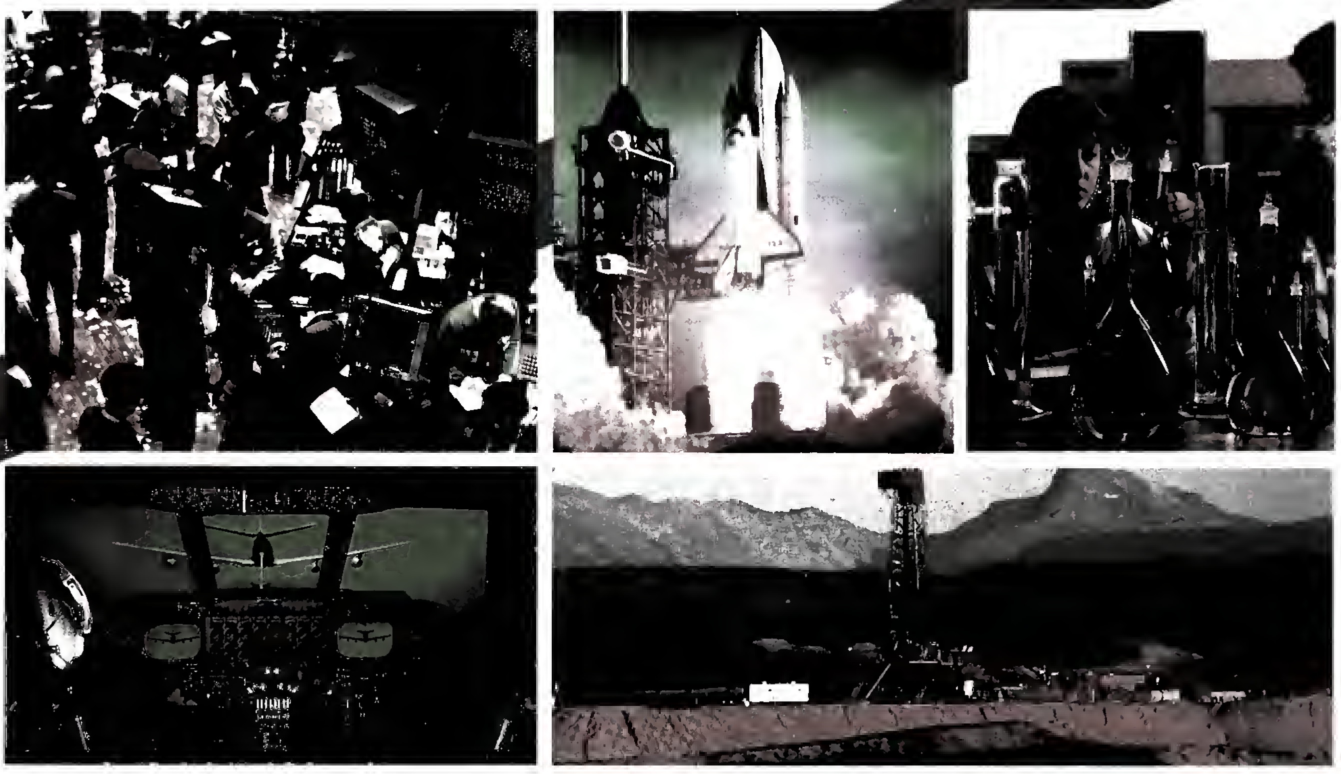

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Tips on shopping for software

By Brian R. Schick
Special to CW‡

Using purchased software packages will almost always be less expensive, take less time to get into operation and entail fewer risks than a development effort — assuming that the right package is obtained from the right vendor.

The steps involved in selecting specific software packages vary with each situation, but a general procedure is applicable in almost all cases. The basic features to look for and questions to ask are listed in the accompanying chart.

Once you have asked yourself these questions, the software you buy will at least be satisfactory for your purposes. The steps to be followed in selecting software packages include:

Classifying needs. If the computer must accommodate several different applications, decide which application is most important and choose the software for it first. Then check to see what good software is available to handle the less important applications on the same computer. If two or more applications have equal priority, you may have to compromise by selecting software to handle both applications adequately.

It is also useful to decide how essential the requirements are. Requirements may be categorized as fixed, flexible and optional. A fixed requirement means that certain functions must be performed in a specific way. For instance, a tax program should print the results in a form acceptable to the government.

A flexible requirement must also accomplish certain functions, but there is some freedom in how it does so. A payroll system, for example, must be able to calculate overtime hours, but it may not matter if straight-time pay and overtime pay are combined on a single check. An optional requirement is one that you could easily live without.

After defining and classifying requirements, write them down so that they can serve as a guide in evaluating software packages.

Make a requirements chart. You can make a requirements chart by using the specifications already developed, paying particular attention to fixed requirements. The result of this step will be a uniform means of evaluating products.

Define software capacity. The amount of data you expect the software to handle needs to be added to the requirements chart. Software capacity limits are set by the software author to ensure that the program can run in the memory available on the computer configuration for which it was designed. The present and anticipated data capacity for the next year or two should be estimated, and these numbers should be added to the requirements chart.

Given that a particular system can perform all the functions required for an application, determine how much data must be stored. Capacity is as much a question of hardware characteristics as it is of software limitations. Software product documentation should relate what kind of hardware char-

See **GUIDE** SR/36

FEATURES	QUESTIONS
The software package must have:	
Adequate functions	Will it do all of the things I want it to do?
Sufficient capacity	Can it handle all of my data? One year, two years from now?
Readable documentation	Are the manuals complete and understandable?
Fair price	Is the price comparable to similar products on the market?
The software package should have:	
Hardware compatibility	Will it work with the existing hardware I have?
File compatibility	Can I interchange files between it and other software I will use?
Ease of use	Will the people using it require extensive training?
Vendor support	Who will answer questions and provide upgrades after I buy the package?

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Fuel parts maker speeds operations via MRP

WINDSOR, Conn. — A rapidly growing manufacturing company, Stanadyne Diesel Systems, discovered that its operations and administrative staff didn't have time to wait for information.

The company needed timely production data if it was going to achieve minimum inventories and delivery objectives. Based here, Stanadyne manufactures diesel fuel-injection pumps, nozzles and fuel filters for automotive, agricultural and industrial OEMs.

In 1977, the company began producing larger volumes of automotive products, moving from a job shop environment to that of a repetitive manufacturer. The company has also grown from a single- to a multiplant operation by building several manufacturing facilities in North Carolina.

It became obvious that Stanadyne had outgrown the Production and Inventory Control System (Pics) that had been in operation for more than 10 years. "It operated by processing manufacturing orders. We needed an 'orderless' system which would explode a master production schedule through bills of material, netting inventory as it went," said Jeff Anderson, manufacturing systems manager at Stanadyne.

"We also needed a material requirements planning [MRP] system which would net on-hand and in-process material, instead of on-hand and on-order," he said.

"Another problem we had to solve was that Pics ran once a week in a regenerative mode, forcing us to throw out our MRP each week and create another from scratch. We needed an MRP system which would run once a day and offer exception reporting."

To find the MRP system that answered all of these needs, Anderson and his committee evaluated 11 software packages. The group selected Pios, the manufacturing control system from On-Line Software International (OSI) of Fort Lee, N.J. Stanadyne installed the master production scheduling, bills of material, inventory and MRP modules of Pios.

"Pios was selected because it is compatible with the CICS/DL/1 environment running on our IBM Model 4341 mainframe," Anderson said.

"Pios also had a multiplant master production scheduling module, multiplant bills of material, which can be used for both MRP and production costing, and it provided inventory control by plant."

At Stanadyne, users design the changes they want for the system, and the data processing staff executes them. The staff has altered Pios to net inventory in-process as opposed to on-order and has masked order numbers from the shop floor and inventory staff.

Inventory module

Alterations also were made to the inventory module of Pios. "We don't move parts in and out of storage areas," Anderson said. "We now take inventory counts from the shop floor and backflush through the bill of material for each assembly to account for the pieces consumed. We altered the basic product to operate as a flow inventory."

Anderson added that the master production scheduling module was another factor in the decision to purchase Pios from OSI. "Although we assemble to customer orders, master production scheduling allows us to decouple MRP from those customer orders, providing a uniform load to the plant," he said. This module allows the planning staff to do online maintenance, simulation and capacity planning with graphics to portray resource loading.

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Hasty hardware decision plagues furniture firm

By Roger Barnes
Special to CW‡

When a national furniture manufacturer decided to install a preprogrammed manufacturing applications package on an IBM System/34, the promise was an operable system in three months for less than $120,000 with only one full-time DP employee. The reality was a $700,000 package modification bill, a computer system too complex for the company's operation and an annual maintenance budget of $120,000.

A Pacific Northwest agribusiness decided to upgrade its batch-oriented card system to an interactive accounting, personnel and inventory system. A Hewlett-Packard Co. HP 3000 with 40 terminals was installed, and a search was conducted for a preprogrammed applications package. The result was a system that did not have the capabilities of the old batch system, an annual DP operations budget twice as large as projected and a DP staff too busy with applications maintenance to do any project development.

The furniture manufacturer had to computerize to remain competitive. After assessing its requirements and a proposed DP budget, the company decided a packaged application would satisfy its requirements. Various vendors were contacted; documentation was reviewed; and the appropriate personnel attended demonstrations. A semidetailed requirements analysis was done, but a request for proposals was not prepared, and formal proposals were not required from the vendors.

Package with modifications

A package was chosen for its overall manufacturing control and accounting capabilities and because it had been installed successfully several times before. Prior to installation, several areas were identified where modifications were required and, with the advice of the vendor, modifications were budgeted at $50,000.

But what management was expecting and what the vendor was willing to provide for the money were different. As management saw what the computer could do, it wanted even more. Within months, the vendor was being asked to modify previous modifications.

A consultant was brought in to get the project under control, and a new programming contractor replaced the original vendor. By the time the company had invested $300,000 in modifications, it was too far into the project to stop. It could only put a moratorium on design changes and complete the programming based on the current change orders. By the

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COSTS

from SR/33

time modifications were halted, the system did not resemble the original package and did not run on the originally configured computer.

The main problem was that management would not stop making changes. There was no design freeze. Management did not control the modifications, change procedures or budget.

The programmers did not insist on a detailed requirements definition and instead made modifications based on their own assumptions. In this case, installing a preprogrammed application was more expensive than starting from scratch and developing a custom application.

This disaster could have been avoided with more attention and control by management and a more detailed assessment of the company's needs and the package's capabilities. Management should have developed a detailed requirements list prior to evaluating packages. A request for proposals should have been prepared and formal proposals solicited from the vendors.

After the package was chosen, detailed specifications for modifications should have been developed and agreed upon. A separate contract should have been negotiated for programming, including cost, schedules and modification approvals. Once the programming phase commenced, no changes should have been allowed until after the system had been up and running for six months.

The agribusiness company had been running a batch-oriented card system for seven years. The annual maintenance cost of the hardware was expensive, breakdowns were frequent and the users were complaining that the system wasn't providing the information necessary to run their departments. Management decided to hire a DP manager to upgrade the system.

The new DP manager analyzed the hardware problems and interviewed the department heads to determine their requirements. Based on this information, he submitted a proposal for a new HP 3000 computer with 40 terminals. His presentation showed how he could save money and give everyone the information they needed. His request was approved immediately, and the HP 3000 was installed.

The DP manager then hired three new programmers to start rewriting the old batch systems to run on the new on-line system. He also began to look for an accounting package to run on the system. The DP manager did not understand accounting, nor did he consult with users about their requirements. He purchased a package that ran on the hardware as configured and had been used in the wholesale office supply industry.

A year and a half later, the package was not yet installed to an acceptable level, and the old hardware was still operating. The users had 397 change requests totaling 4,000 programming hours. The major problem in this case was the fact that the hardware decision was made before the applications requirements were thoroughly understood; consequently, the hardware dictated the software. When it came time to select the applications package, the users were not contacted.

Thus, the DP staff had no way of determining requirements or comparing package capabilities with requirements, and users felt left out of the process and, subsequently, weren't willing to help the DP staff or vendor install the package that had been forced upon them.

This disaster could have been avoided by taking an applications approach instead of a hardware approach to the system. The DP manager came to a small business with a small computer from a large government shop with multimainframes. The agribusiness needed a manager who was user- and applications-oriented. The analysis of the system should have been focused on detailed user requirements, and the users should have been involved in reviewing and approving the package selection and modification requirements.

Barnes is director of management services for San Francisco-based Moss Adams, certified public accountants.

GUIDE

from SR/31

acteristics are required and should also describe any limitations inherent in the software.

Locate the packages. Identify software products that meet, or come close to meeting, the requirements. Read product reviews in computer magazines, scan product advertisements in trade periodicals, visit local computer dealers, contact your industry or trade association, talk to associates who have bought computer software for requirements similar to yours or call your accounting firm. Another source of information is published directories of software.

Rank the products. This is based on a tabulation of how closely the products meet the requirements. To be sure that the software is right for your business:

- ■ Purchase or borrow the manual, and read it to understand the capabilities and limitations of the software.
- ■ Attend a demonstration of the software — if possible, using some of your own data.
- ■ Consider whether the people who will use the software can follow the instructions provided or will require special training.

If you do a thorough job in listing requirements in detail, one product should stand out above the others.

Schick is manager of management consulting services at Coopers & Lybrand in Springfield, Mass.

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InSci

In-house system cuts number-crunchers' costs

CHICAGO — Fritz & Griffin, a general accounting firm, is working at three times the volume it did a little over a year ago, when it used service bureaus to crunch numbers and prepare monthly financial statements for clients. But with the purchase of an in-house computer system, the company is paying no more to process the heavier work load.

"Cost and inflexibility of the service bureaus caused us to explore the advantages we could gain from purchasing our own system," according to Don Griffin, a partner at the firm.

"We engaged consultants to help us find the best system. We defined our current needs and projected out three to five years, knowing elastic capabilities would be needed if the system was to have a long life with us.

"In our eyes, software designed for IBM brands had an edge over other products, especially if IBM recommended or approved of the software," he said.

Fritz & Griffin settled upon software from the Management Control Systems Division of Informatics General Corp., Woodland Hills, Calif., and the IBM Datamaster computer. Today, the firm's system also has two hard disk drives, two terminals, two printers and a word processing package from IBM.

Range of clients

Fritz & Griffin is a generalist accounting concern with clients ranging from manufacturing to retailing to transportation. The firm also provides financial services to a farm, a restaurant and a private school.

"With such a varied clientele, our computer system had to fit the needs of a group of clients without regard to industry, size of company or volume of accounting needs," Griffin said. "After careful consideration, we decided the Informatics-IBM combination gave us the best system for that kind of flexibility."

For example, Fritz & Griffin functions as a complete accounting department for some clients, making their bank deposits, writing checks, submitting checks for signing and preparing a general ledger.

"To do that, we need an integrated system where the general ledger and accounts payable programs work together, and we don't have to reenter information from one program into the other," Griffin said.

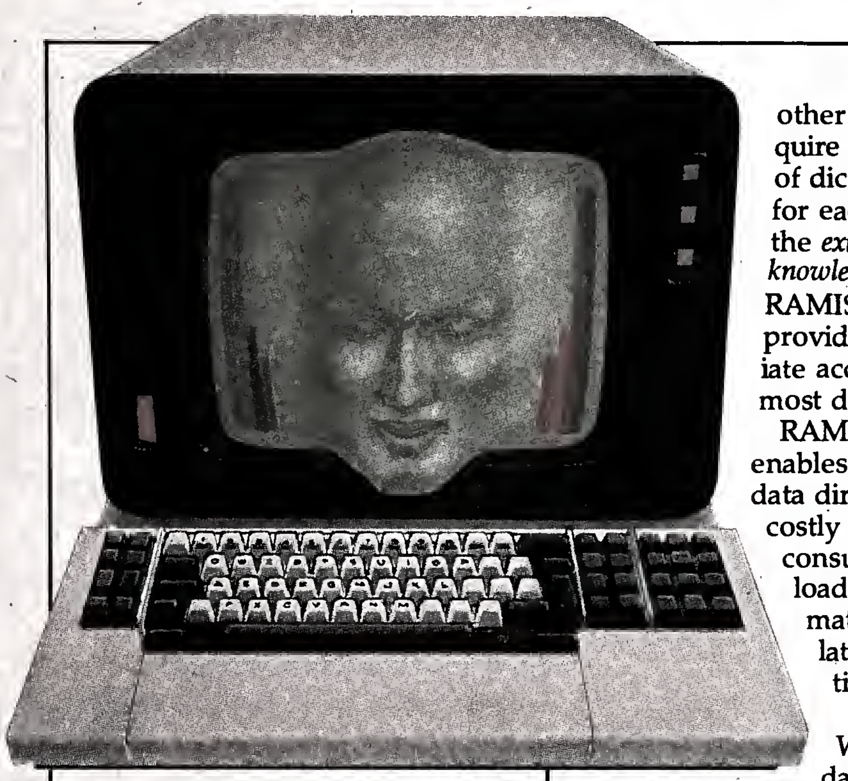
"For instance, we invoke a program tc pay a check and it's automatically posted into the general ledger. However, for certain clients, we bypass that function and just process checks after payment. Most of the systems we looked at couldn't do both."

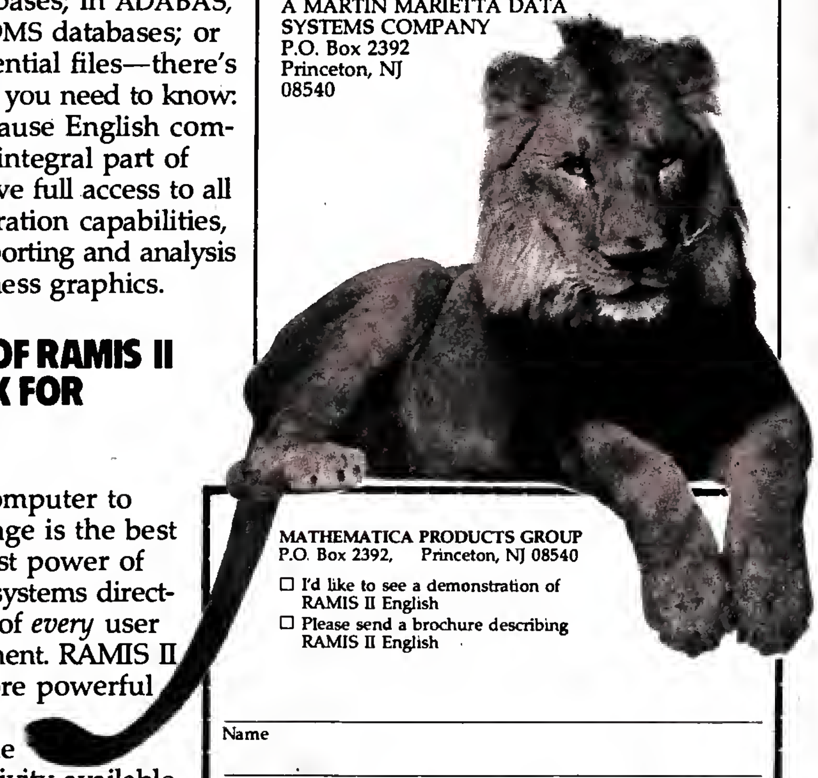
Fritz & Griffin does business differently now, because work is not sent to another location. The firm also takes some shortcuts that could not be done with service bureaus, he said.

Hash totaling was required down to account numbers with all figures tied in and zero balanced before a bureau could issue a financial statement. Accountants can now arrive at a preliminary profit figure without account number hash totals. They review an edit report to check for accuracy of posting, and then a final statement is issued.

In addition, all processing is run at night so accountants can work with fresh information every day rather than wait for mail or messenger delivery from the service bureau. "With the flexibility in our software system, we feel we can select a format for each client that will make the right impression.

"We've also been able to add or delete items depending on individual needs and even provide additional documents," Griffin added.





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System integrates payroll, personnel duties for city

PORTLAND, Ore. — With 750 employees represented by 22 different employee groups and covered bv nine union contracts, the port of Portland has its hands full in administering pay and benefits. Each contract specifies different wages and benefits. Overtime rates, holiday wages and holidays and the number of personal-leave days vary depending on the union in which an employee is a member.

"A computerized system that integrates payroll and personnel functions makes it easy to perform the numerous calculations needed to generate paychecks and benefits for both our union and nonunion employees," said Carol Byers, supervisor of the port of Portland's Human Resources Information Center.

The port of Portland administers five marine terminals, a ship repair yard, three airports and three industrial parks in three Oregon counties. It also directs economic development throughout the district and supports maritime, aviation and industrial facilities along with services and related business activities. The economic impact of the port's operations on the local economy is estimated at more than $6 million a day.

Changing pay rates

A packaged software system provides the port with the ability to handle frequently changing rates of pay, such as the quarterly cost-of-living increases mandated by union contracts.

"The system also enables us to retrieve payroll and personnel information rapidly and to compile insurance, workmen's compensation, tax and other reports," Byers explained.

The port's previous computer system automated some of the payroll functions and none of the personnel functions.

Most processing was handled manually, an arrangement that limited the number of reports the port was able to produce, Byers said.

The integrated payroll and personnel system was obtained from Information Science, Inc. The system automates the processing and recordkeeping of payroll and personnel information, including job, wage and education histories, benefits, work transfers, performance ratings and other data.

This data base permits the port to update an employee's payroll and personnel records from a single entry, Byers said.

Mass updates

The port also now has the ability to perform mass updates. Changes in salary grades and ranges for an entire group of employees may be accomplished through a single entry that commands the automated procedures, Byers said.

For integrating payroll, personnel and continuous employment history functions, it required an initial investment in equipment and software of approximately $70,000, she said. For the port to develop comparable software on its own would have required an investment of at least $300,000, Byers said.

That does not include the continuing costs of maintaining and updating the system for legislative and regulatory changes, she added.

Additionally, the port was able to convert its semiautomated payroll and manual personnel systems to a completely automated system in six months, compared to the two or three years projected to develop a similar system in house, according to Byers.

The port is now able to project compensation cost and to review, in detail, time and manpower assignments.

As a result, Byers said, its executives are able to analyze productivity and contain expenses.

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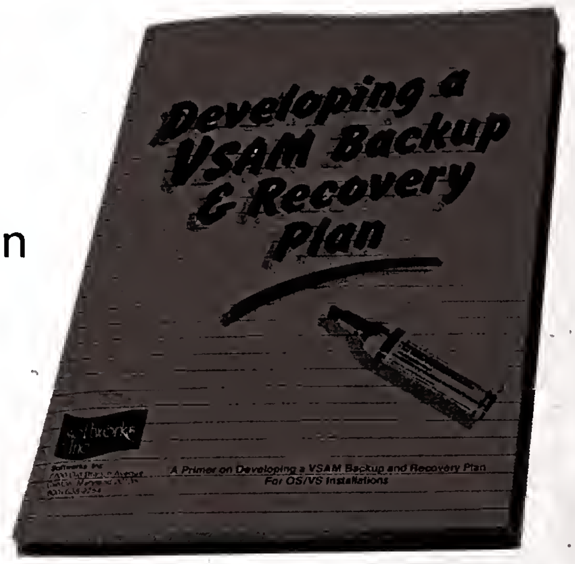
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When buying a package . . .

By Harold M. Snider
Special to CW‡

When investigating the option of buying a software package, there are two questions that will generate the other questions you should ask. They are: "What should it do?" and "How should it be done?"

These are the same questions you would ask when hiring a person, buying a manufacturing machine or even commissioning a new building. It is important to begin the search at the conceptual level and, as criteria are met, continue the search by asking more detailed questions.

Application software packages must be evaluated from a business perspective. It is important to know at the outset whether the package will meet your business requirements now as well as in the future.

Vendor presentations

Usually, evaluations are performed by inviting vendors of the software to make presentations to a combined meeting of business and DP personnel. After all the presentations have been reviewed by the group, packages may or may not be recommended for continued evaluation.

Meetings are then scheduled so detailed business and DP questions can be answered by the vendors. Interviews with vendors' references may also take place. Eventually, the packages will be compared and a decision made.

While this method is sound, key questions are often overlooked. Sometimes, knowledge of the answers would have influenced the final selection. Perhaps contracts would have been negotiated differently; budgets, deadlines or the overall implementation effort would have been estimated better; and roles and responsibilities of the vendor and the company would have been better defined.

Questions not asked

There are several reasons that important questions are not asked. For example:

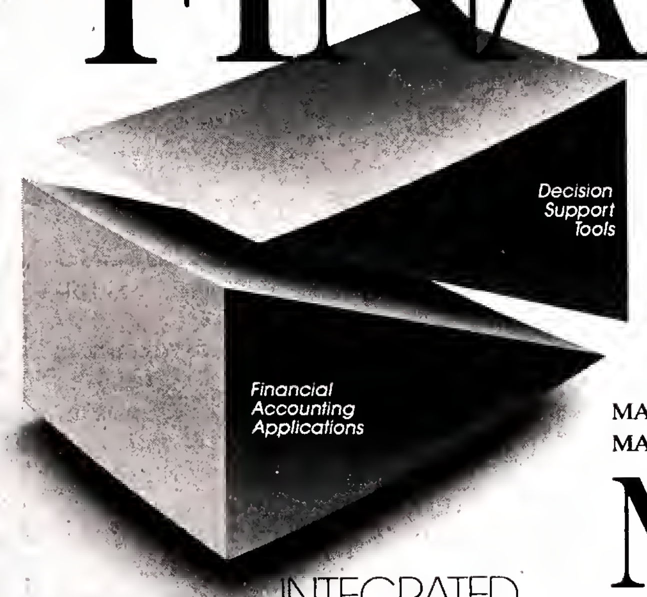
- Vendors usually emphasize what a package will do, rather than what it won't do.
- When the package is to support a given product or service, the scope of the questioning may not include other aspects of the business affected by the package.
- When the package is to replace a current system, the focus may be on what the system does now rather than the business it will represent in the future.

See **QUESTIONS** SR/42

DATA CLASSES PROCESSES	Product Description	Product Status	Product Cost	Product Futures	Raw Materials Description	Raw Materials Status	Raw Materials Futures	Employee Description	Employee Status	Employee Futures	Equipment Description	Equipment Status	Equipment Futures	Building & Real Estate Description	Building & Real Estate Futures	Promotions	Chart of Accounts Description & Status	Chart of Accounts Futures	Capital Debt	Marketplace	Purchase Order	Customer Order	Goods in Process Description & Status	Goods in Process Futures	Customer Description	Customer Credit Status	Supplier Debt Status	Supplier Description	Business	Legal Requirements	Economics
Establish Business Direction		U															U			U									C/U	U	U
Determine & Forecast Product			U	C/U														U		U		U							U		
Determine Building & Real Estate Requirements				U										U	C/U			U		U									U	U	U
Determine & Control Financial Requirements																	U	C/U	C/U										U		C/U
Determine Personnel Requirements								U	U	C/U			U		U			U		U									U	U	U
Comply With Legal Requirements	U							U	U		U						U													C/U	
Analyze Marketplace																				C/U											
Ship, Receive & Control Product Inventory	U	C/U																				U	U								
Advertise & Promote Product	U	U		U												C/U		U		U											
Market Product	U			U												U				U		U			C/U						
Enter & Control Customer Order	U	U																				C/U			U	U					
Engineer Product	C/U			U	C/U						U																	U			
Plan Seasonal Production	U			U			C/U		U			U	C/U	U										C/U							
Purchase Raw Materials					U	U	U														C/U						U	C/U			
Control Raw Materials Inventory					U	C/U															U										
Schedule & Control Production	U					U			U			U											C/U	U							
Acquire & Dispose Facilities & Equipment											C/U	U	U	C/U	U																
Maintain Production Equipment									U		U	C/U	U																		
Receive & Disburse Cash																	U		U		U	U			U	C/U	C/U	U			
Account for Product Cost	U		C/U		U	U		U	U								U						U								
Manage Accounts		U				U			U			U		U			C/U		U				U			U	U				
Hire & Terminate Personnel								C/U	U	U																				U	
Manage Personnel								U	C/U	U																				U	

Process in relation to Data Class Matrix.

LEGEND
C – create
U – use



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QUESTIONS

from SR/41

■ Questioners may assume topics have been covered by others in the company, usually when several groups are set up to focus on different aspects of the package.

Clearly, a framework is needed for any evaluation, one which will actually stimulate the questioning from both the business and, to some extent, the technical points of view. Applications software basically uses and creates data for some business purpose.

Determining where the application software differs from the business can be done in a structured way, if both the business and the software are described in the same terms, namely data and its relations to business processes.

The terms and chart described below will already be familiar to those organizations involved with IBM's Business Systems Planning (BSP) methodology.

A BSP study will produce an information architecture — a high-level description of the enterprise or business unit. Although it is created for strategic purposes and is required whether you are buying or building applications software, the architecture is also valuable as a framework for evaluating software packages.

One of the charts produced by the study, the data class/process matrix, indicates which data classes are created (C) and used (U) by each business process. (See Figure on SR/41.) "Business process" can be defined as a group of logically related decisions and activities required to manage the resources of the business. Processes must be defined by management. A business perspective, rather than a data processing perspective, is required.

"Data class" is a high-level grouping of data about things or entities that are significant to the organization. The data class/process matrix shows, at a high level, what information is required in order to perform the business processes.

Vendors can produce an architecture that describes their software in terms of the company's processes and data classes. For each business process, the chart must indicate which data classes are created and used by the vendor's software.

Obviously, the vendors must not be shown the architecture developed by the company, but they must be given definitions of all the terms used. Also, creation of the chart may be difficult for a marketing representative unless a reasonable amount of time is allowed for consultation with the system designers. One to three weeks' time should be sufficient.

When the vendors' charts are finished, they can be compared to the company's chart quite easily. Each square can be investigated in an orderly fashion.

Vendors can also be compared with each other on equal terms within the set framework. The charts will tend to stimulate the questioning rather than provide answers.

Potential questions

Some questions that might arise are:

■ Was a similar chart already available, based on the vendor's definition of business processes and data classes?

■ Was the vendor willing and/or able to produce the chart? If not, why? What are the implications for on-going support?

■ What processes are not supported? Why? What is the impact on the business?

■ What data classes are not supported? What is the impact on the business? What effort is required to support them?

■ What data classes are created by more than one process? Flexibility and complexity issues may arise.

■ What data classes are used, but not created, by the vendor's system? Why? What effort is required for the company to provide the data to the system?

■ Where are the differences in the way the system uses and creates data to support the business? What is the impact?

Software package evaluations rarely conclude that a package matches all of the business requirements.

A decision must be made on the optimum solution, one which can best be identified by comparing the business and the package on equal terms.

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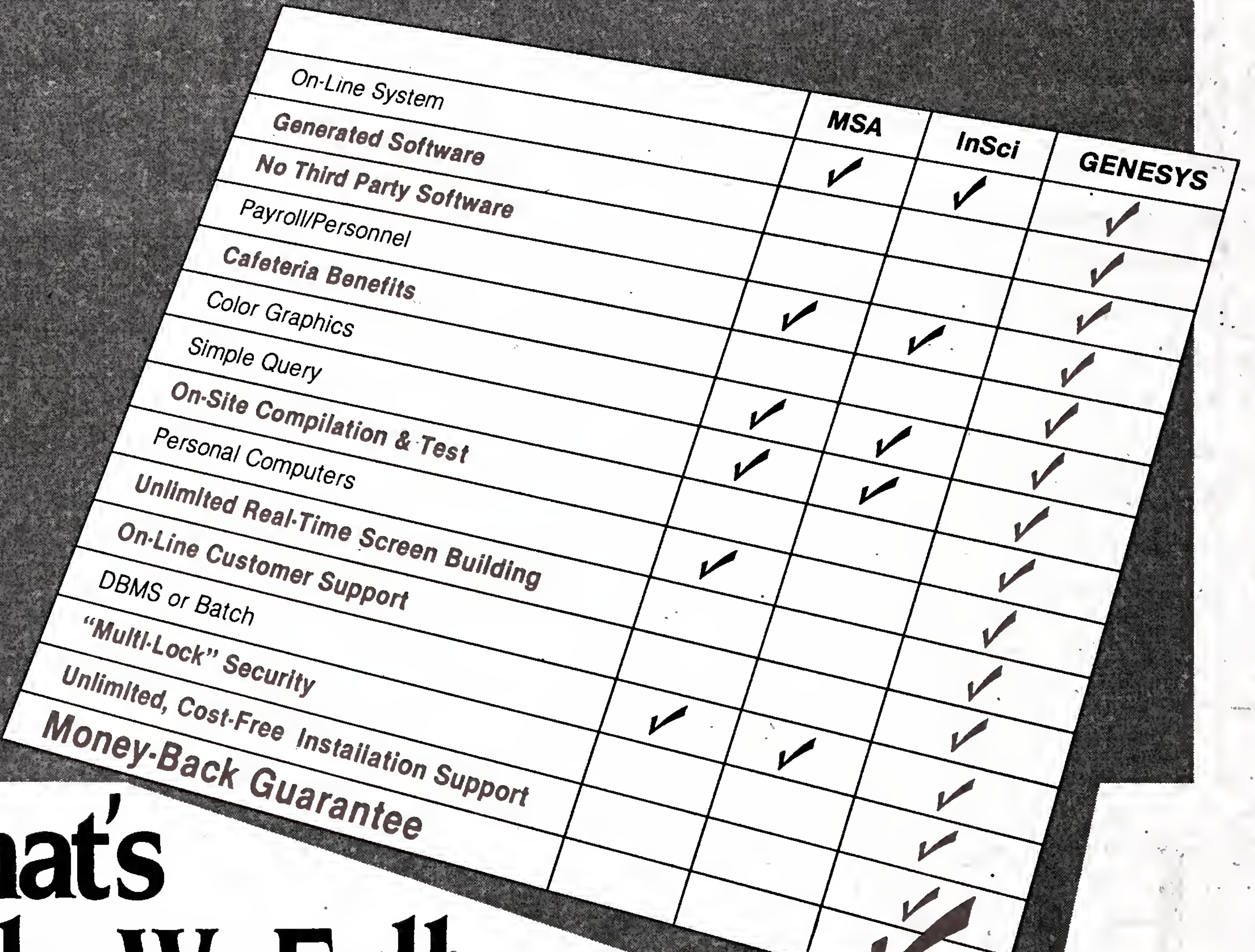

	MSA	InSci	GENESYS
On-Line System	✓	✓	✓
Generated Software			✓
No Third Party Software			✓
Payroll/Personnel	✓	✓	✓
Cafeteria Benefits			✓
Color Graphics	✓	✓	✓
Simple Query	✓	✓	✓
On-Site Compilation & Test			✓
Personal Computers	✓		✓
Unlimited Real-Time Screen Building			✓
On-Line Customer Support			✓
DBMS or Batch	✓	✓	✓
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System helps resolve DPer, end-user woes

Demands on DPers cut

AUSTIN, Texas — The relationship between DPers and end users is in some ways like a marriage: It can have its strains as each struggles to understand the viewpoint of the other.

But the two groups at the Texas Department of Human Resources here have resolved many of their differences, and they give some of the credit to software from the Chicago-based firm of SPSS, Inc. The department has been using the SPSS Data Analysis System and the interactive SCSS Conversational System since 1978.

"Our end users know more about their systems than we do in the data processing shop," said Diana Williamson, director of the department's time-sharing user support section. "It makes sense to be talking to users about their files and what they want to do in their analysis, rather than just solving technical problems," Williamson added.

The department administers Texas' Aid to Families With Dependent Children program, food stamp program, foster care and adoption programs, Medicaid, health and employment services, disaster and refugee assistance, home energy assistance and other programs.

One out of six Texans

With a total budget in fiscal 1982 of almost $2 billion, the department estimates that each year its programs reach about one out of every six Texans. SPSS and SCSS software are used to organize and summarize data on most of these human services programs.

Williamson said that SPSS users can quickly handle most of their own questions by using the SPSS documentation.

Even though last month her department logged 1,600 SPSS accesses from 57 users, her shop gets called only for SPSS operational or syntax questions.

And the use of SPSS and SCSS has cut down on demands for her DP shop to come up with statistics and reports on an ad hoc basis.

User support section

The time-sharing user support section was formed two years ago, with SPSS as an end-user's tool. Users like Gary Anderson, a research associate in planning, have chosen SPSS and SCSS to analyze demographic and econometric data, surveys and internal department records for planning and forecasting. Anderson has trained about 100 people in SCSS in order to promote end-user "computing self-sufficiency."

"Under the old system, you might wait months for the DP shop to come through with some items of information — where in planning you need a quick response," he said. "By that time, invariably someone wants the information in a different format or with different variables."

"I'm a teacher by nature," said Dr. Michael Penticuff. "I've invested a lot of effort in SPSS personally." As director of data access in the program budget area, he supervises a staff of 17, most of whom use SPSS to analyze data.

"I help them to see the applications SPSS may have in their analysis, working side by side at the terminals.

"We need SPSS reporting facilities to answer an endless barrage of questions from the news media, legislators, people writing studies and administrators in other departments.

"Our analysts and researchers have to manipulate enormous data files constantly; with SPSS they can do that," Penticuff contended.

Department personnel use the packages heavily for statistics. Penticuff uses procedures such as Write Cases, Crosstabs Report and Frequencies.

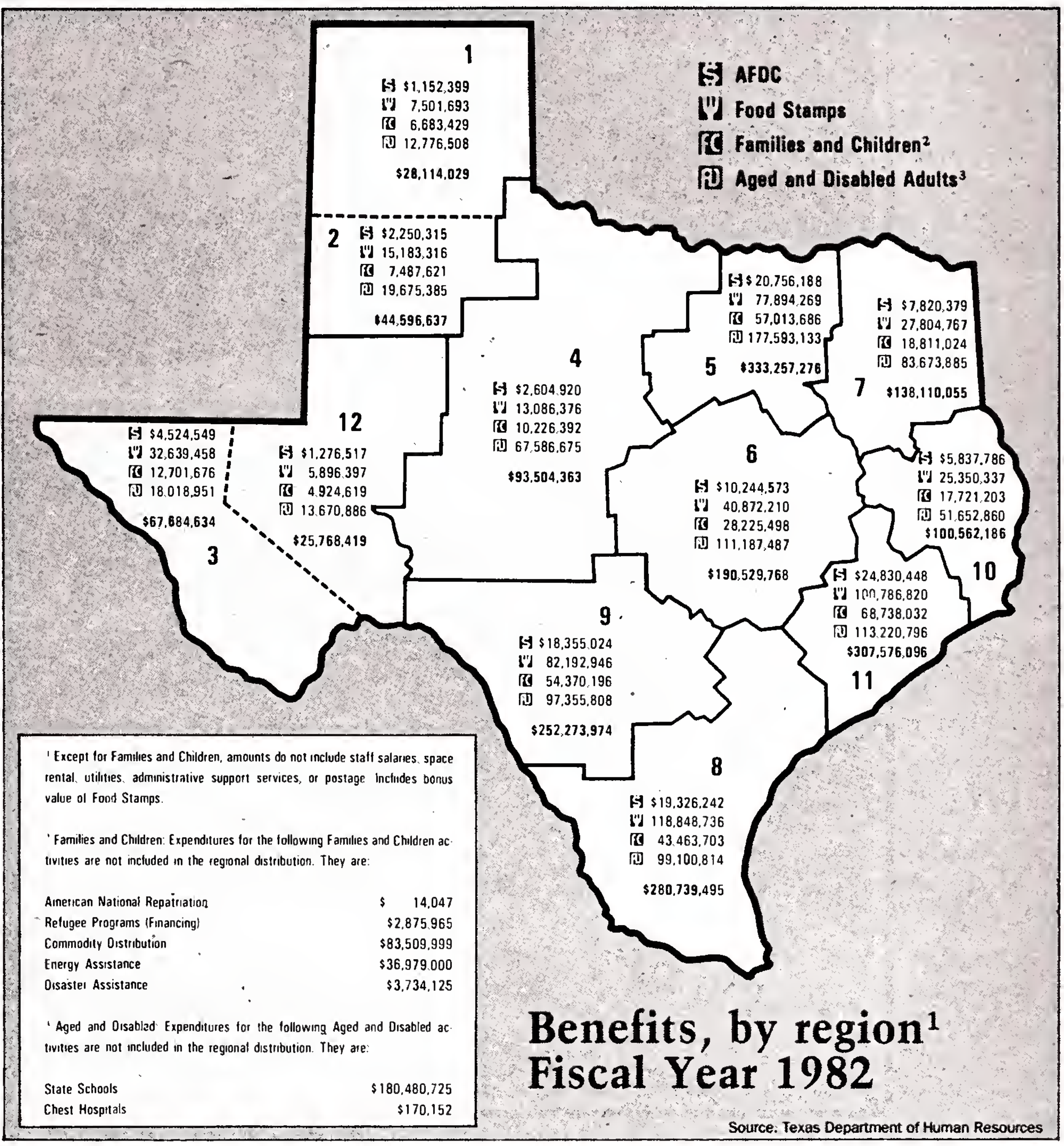
"I've even used SPSS to fill out forms, which is not a statistical process at all. Reports that had been taking people several weeks or a month to complete are now a two-hour process. We prepare the data and use the Write Cases procedure to format the output," Penticuff added.

> *"Our end users know more about their systems than we do in the data processing shop. It makes sense to be talking to users about their files and what they want to do in their analysis, rather than just solving technical problems. —* Diana Williamson, director of the time-sharing user support section."

Anderson has become involved in exploring new applications for the SCSS and SPSS systems and promoting their use in state governments. He sees SPSS and SCSS as major decision support tools for bringing quicker, more efficient analysis to areas of state government that need better ways to look at large aggregations of data.

As for the marriage of convenience between the end-user planners and administrators and the DPers, Anderson said that it is going well.

"We've developed a training system with the support of the time-sharing user support section that seems to work for all of us," he said.



Benefits, by region[1]
Fiscal Year 1982

Source: Texas Department of Human Resources

[1] Except for Families and Children, amounts do not include staff salaries, space rental, utilities, administrative support services, or postage. Includes bonus value of Food Stamps.

[2] Families and Children: Expenditures for the following Families and Children activities are not included in the regional distribution. They are:

American National Repatriation	$ 14,047
Refugee Programs (Financing)	$2,875,965
Commodity Distribution	$83,509,999
Energy Assistance	$36,979,000
Disaster Assistance	$3,734,125

[3] Aged and Disablad: Expenditures for the following Aged and Disabled activities are not included in the regional distribution. They are:

State Schools	$180,480,725
Chest Hospitals	$170,152

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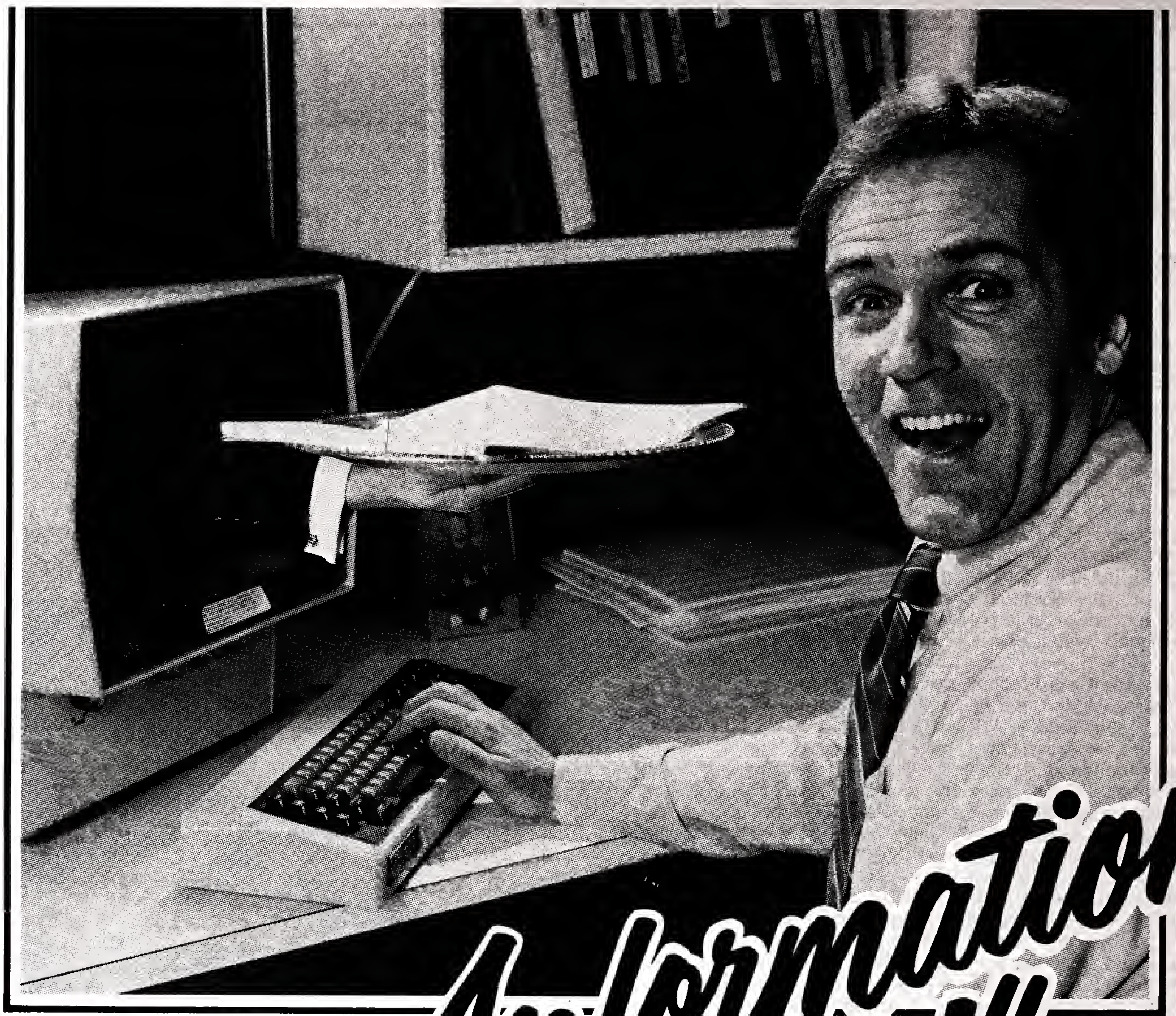

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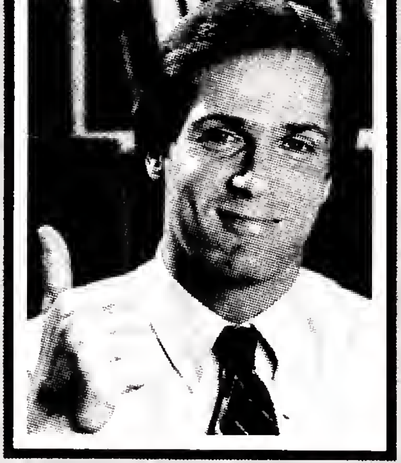

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How do you choose a personnel system?

Requirements list first priority

By Laura L. Vaughan
Special to CW‡

Today the broadening scope of human resource management requires decision making that directly affects internal policies, career development programs and organizational spending. Enter the computer and human resource management software. But how do you select a personnel system? Carefully.

The approach is much the same as screening applicants for qualifications. A human resource management system (HRMS) should be hired to do a job.

Selection depends upon understanding a system's strengths, limitations and potential to meet future needs.

An HRMS should never be selected by one individual. Since it will be implemented and utilized by a variety of people at different levels, key people from several areas should be designated as a selection committee so their input can be gathered from the very beginning.

Requirements list

One of your committee's first priorities should be to draw up a requirements list. This list is very similar to a job description. It should itemize both the basic and unique requirements you are looking for in a personnel system.

Keep your list concise and to the point, and identify the "must have," "desirable" and "wish-type" requirements separately.

This list can be developed into a questionnaire to be mailed to prospective vendors. Include a brief statement of your objective, and be sure to provide space so that the vendor can discuss product philosophy, service approach, maintenance policies and future enhancements to the product.

Package deal

It is important to remember that the personnel system and the vendor are a package deal. You are establishing a long-term business relationship. Exercise the same care you would in evaluating a candidate for upper management.

Pay particular attention to the following areas:

■ Fit. Does the system fulfill the majority of your requirements for processing and reporting? Define what is missing from each vendor package and narrow the selection down to those systems that meet most of your needs.

■ Flexibility. Will the system accommodate future changes and growth within your company? Does the system allow you to define what information is to be processed? Can you produce the reports you need? Can new companies, divisions or departments be added easily? Does it interface with a payroll system? Is it on-line? Are the contents readily available for immediate inquiry and/or modification? Can the information be displayed graphically?

■ Training. Is training provided for the data processing staff? The terminal operators? Personnel management? Consider what kind and how much training is available and where it is to take place.

■ Documentation. What type is provided? Is it clear, concise and readable? Remember, good documentation will assist in training new personnel employees.

■ Security. Can you add, delete or restrict terminal operators from specific areas in the system? Can operators be added or deleted easily? Is there an audit trail to track what changes were made and when?

■ Installation. Can the vendor meet your desired dates? Who will perform the installation? Can the vendor assist with any transfer of information from an existing system?

■ Support. This critical area is often forgotten in the evaluation process. Ask what the standard procedure for support is, and don't forget to ask about the availability of phone-in support.

■ Maintenance. Again, you are establishing a long-term commitment. What happens after the sale? Ask about a software maintenance agreement and review a copy of it.

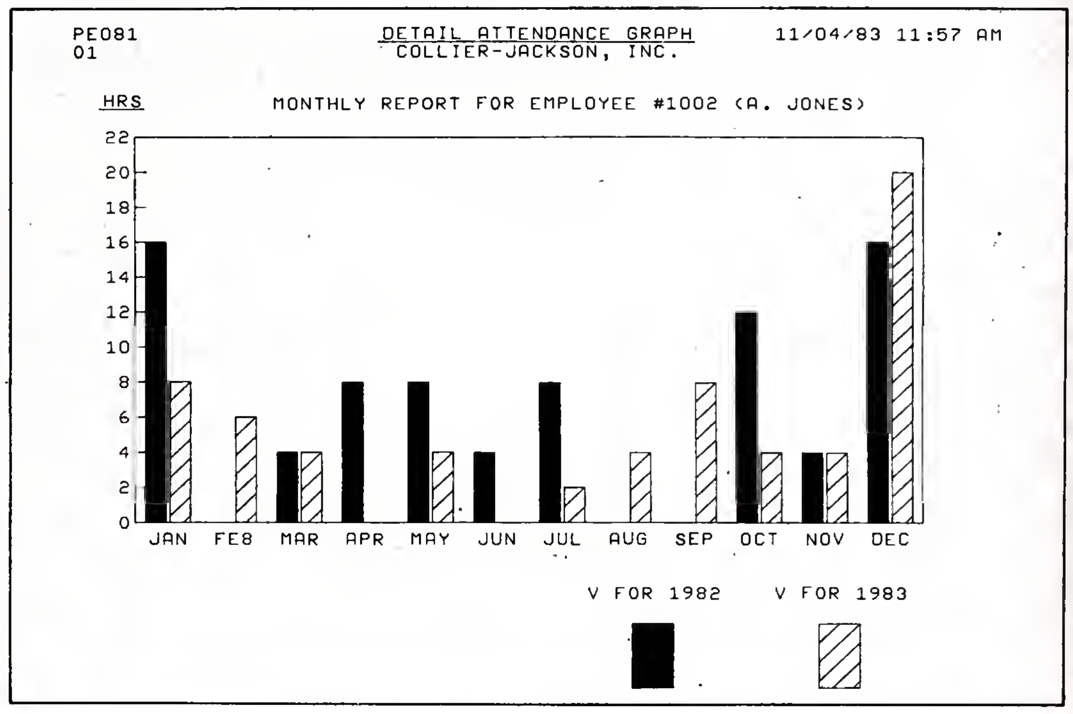
■ Cost. Many factors affect the systems cost, and cost is not always indicative of quality. Does the cost include documentation? Installation? Training? What is the warranty?

■ References. Contact several of the vendor's current customers to discuss their opinions of the vendor as well as its HRMS. If possible, talk to those references who are of a similar size in a similar type of business.

After reviewing the vendor information, you should have narrowed your selection to two or three vendors. If at all possible, visit the vendors' sites.

The importance of on-site visitation cannot be overemphasized. It gives you a chance to see the software in operation and to evaluate its ease of use. It also affords you the opportunity to get to know the firm's key people.

More than likely, you'll glean a feeling for the firm's personality and a better perspective of its operating philosophy. Very often, the on-site visitation will make the final decision an easy one.



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Vaughan is financial systems sales manager at Collier-Jackson, Inc.

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Systems methodology wraps up the package

By John D. Toellner
Special to CW‡

Applications software packages can provide quick solutions for underbudgeted DP installations jammed with backlogs, but without adequate planning and control, the quick fix can become a slow drain on time and money.

How responsibilities and duties are performed directly affects the value and efficiency of any system. Unless procedural mechanisms exist to ensure that appropriate steps are taken at each point in a project, data resources can become uncontrolled and fragmented. Systems methodologies offer the planning, control and overall management that are essential in a productive information service department.

Both new technology and methodology are important. What is needed is a marriage of the immediate advantages of packaged software with the long-term benefits of good project planning. Because of the increasing use of applications packages, many systems development and management consulting firms are creating standards and procedures for the evaluation, modification and installation of packaged software.

A project may start because enhancements are needed on a package. Sometimes the package selection isn't made until the system and program design specifications are in place, usually because the software satisfies only a small portion of the system requirements.

In any case, a good methodology takes each situation into consideration. The evaluation process should encompass functional analysis to ensure that user requirements are being met, a definition phase to confirm that the software matches the specifications and a performance test to determine if the package performs appropriately.

If a few user requirements are not met, or some features and functions in the package exceed specifications, the modification process must be initiated. After all modification demands are identified, planning and estimating procedures should be undertaken. Massive modification to packaged software should be considered carefully. Experience has shown that such changes often create downstream complications and should, in most cases, be discouraged.

At a recent user conference sponsored by Spectrum International, Inc., a data processing systems development and management consulting firm, Abbott Laboratories reported on its experiences with modifying packages. The company's advice was not to modify, but instead, to create interface programs to resolve mismatches with user requirements.

The execution of interface and modification work is determined by the architecture of each methodology. At Spectrum, for example, analysts identified the work in the form of life-cycle tasks, walk-throughs and documentation requirements that were then given to the vendor. Life-cycle tasks included the preliminary design, detail and program designs and programming activities, as well as supplementary tasks unique to the process of installing purchased software packages.

Maintenance agreement

Another important installation activity is the determination of a maintenance agreement. Here there are no clear guidelines because the decision depends on the experience level of both the client and vendor staffs. Some software packages are best supported on a continuing basis by the vendor, but others can be handled through a transition process that gives maintenance responsibilities to the client in phases. In some cases, the best arrangement is for the purchaser to take responsibility immediately after initial implementation.

A systems methodology provides the guidance for easier maintenance and greater flexibility of packaged software. When using applications from multiple vendors, for example, it is difficult to have consistency from document to document and from project to project. With a methodology, where the architecture is designed to control the sequence and format of all project deliverables, consistency is ensured during installation.

A good methodology provides overall project management through planning and estimating functions. The information services department is forced to capture user requirements before large sums of money and a great deal of time are spent, whether it is for systems development, purchasing and installing software packages or project maintenance.

The key element in the methodology is to have the package software process merged into a single life cycle that will also serve other software projects.

Toellner is president and chairman of the board of Spectrum International.

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MRP software study
Methods for evaluation

By Robert Clifford
and Anita Lang
Special to CW‡

The remarkable proliferation of manufacturing resource planning (MRP) software recently has made it difficult to compare competing products and to select a product that demonstrates the best fit with the way a manufacturer does business.

Over the course of the last year, Keane, Inc., a DP consulting firm in Lexington, Mass., conducted a study of companies purchasing such products. An in-depth interview was conducted with key personnel involved in the selection process from over 50 firms that had recently purchased and implemented MRP software. Additionally, data was collected on a more informal basis by Keane's marketing and sales staff, which contacted over 2,000 individuals by telephone and met with representatives from 150 companies actively looking to purchase MRP software.

Keane found that companies can be roughly divided into three groups in their approach to the MRP search. The large manufacturing firms with over $30 million in revenues, not surprisingly, had the most structured and disciplined methodology. Over 70% of these firms used a committee approach, generally involving six to eight players. Typically, these committees included the manufacturing manager, the controller, the MIS director, a data processing staff member and the operations and production managers. One-third of the firms also engaged the services of a consultant.

In short, these firms included key personnel in the selection process, not only to evaluate the software packages, but to establish the packages' acceptance criteria. These companies generally formulated a structured methodology that closely follows the six principles of productivity management (see chart above).

The middle tier of companies ($10 million to $30 million in revenues) tended to operate in a significantly less structured way. This group tended to have its short- and immediate-term needs very well defined, and senior management was intimately involved with the selection process. This group was less certain about projected needs for the future.

The decisions were generally made a lot quicker. While some companies used the committee approach, many went about selection in a more ad hoc way.

The small manufacturers were the least structured and organized in the selection process. These firms, for the most part, perceived their manufacturing environment to be in need of more stringent controls. There was also a perceived need to computerize, although the company's problems were often not well defined at this point.

A number of factors distinguish the more successful game players:

■ While a committee approach often is helpful, the structure can often get in the way of making a sound business decision in a timely way.

■ A number of committees attempted to reduce the management decision to a computerized model or to feature a checklist. While such tools can be effective in terms of organizing the evaluation process, they should not substitute for a sound management decision. Likewise, while private consultants can be enormously helpful in educating companies about such products, they should never make the final determining decision.

■ The companies that appointed strong leaders supported by senior management to manage the selection process were often the most successful. These leaders delegated tasks to individuals on the committee or within the company, establishing both time frames and budgets.

Other important points to address in the selection process include:

■ Making sure that your company can grow with the package you ultimately plan to purchase. Ensure upward compatibility in terms of the hardware.

■ Determining that the product has been successfully installed elsewhere. Talk to other users.

■ Ensuring that the company you plan to do business with will be around next year to support you.

■ Asking if the vendor has the ability to customize and modify the package. If not, this work may ultimately be very costly. Determine at the outset how much support and training the vendor will provide as a part of the purchase price.

Define The Problems

■ Identify the expectations to be delivered by the software
■ Review the manufacturing environment and prioritize needs for each functional area
■ Determine that anticipated results are realistic; an 80% fit with a packaged solution is a viable figure

Involve The Right People

■ Identify the software selection team
■ Structure project responsibilities
■ Establish roles, goals and objectives

Estimate Time And Costs To Purchase And Implement MRP

■ Avoid "premature cost precision"
■ Document estimating assumptions
■ Establish budgets for both time frames and costs

Break The Job Down

■ Define all tasks in terms of measurable milestones of reasonably short duration
■ Identify each time frame into deliverables
■ Create weekly status reporting

Manage Package Modifications

■ Define procedures for changes
■ Determine that only critical changes will be made initially
■ Determine impact of changes
■ Obtain budget/time authorization
■ Agree to "manage" changes

Agree On Selection Criteria

■ Formally agree on selection criteria
■ Document series of approvals
■ Establish key authorization to proceed
■ Agree/Deliver/Approve = "DONE"

Principles of productivity management

■ Researching any number of documents that attempt to define what should be included in a standard manufacturing system. They can be enormously useful. These de facto standards say that a firm should look for a package that is on-line and real-time, is written in a popular language for ease of maintenance, is designed to allow for simplified modifications and is well documented.

■ Getting in writing the vendor's promise that an enhancement or feature that is critical to your operation "will be available Jan. 1."

Clifford is the general manager for Keane's manufacturing products group. Lang is a marketing analyst for Keane's information services division.

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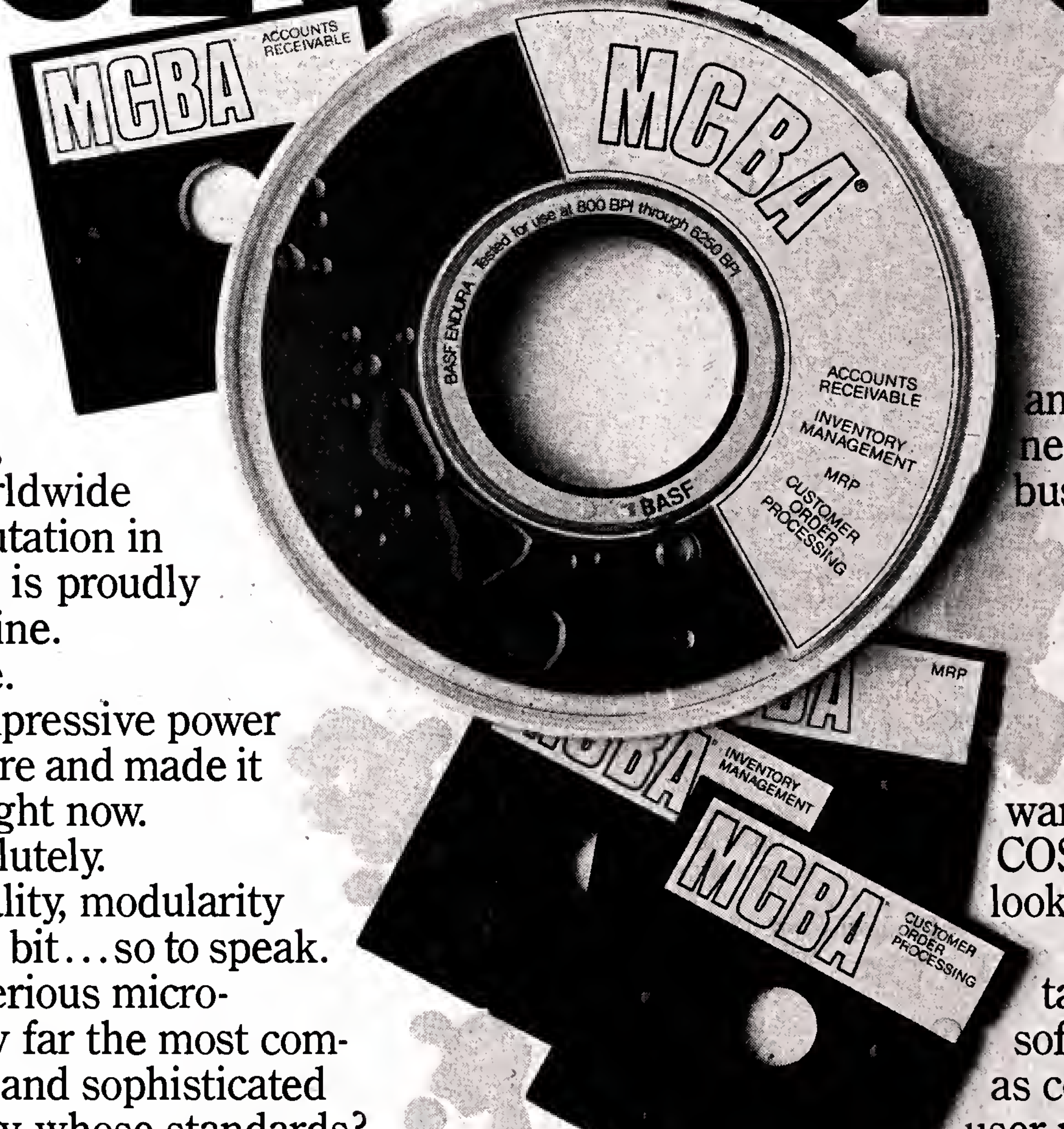
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Tips for automating the general ledger

By Susan B. Kramer
Special to CW‡

The general ledger is the core of any accounting system and, as such, is one of the most valuable tools for management's day-to-day control and monitoring of the company's results and goals. It provides information through which management can measure performance against objectives, redefine the company's principal goals, monitor its cash position and identify changes in productivity and profitability.

Once the decision has been made to automate the general ledger and purchase a packaged product, there are a few important steps that should be followed.

Establish a project team. From the outset, a project team should be organized consisting of both accounting and DP personnel. Although a representative from the accounting department will ensure the quality of the solution provided by the software product, the data processing manager will maintain the ultimate responsibility for the entire system's efficiency.

It is the project team's responsibility to educate the corporation, including corporate management, accounting staff and data processing personnel. Corporate management should have realistic expectations regarding the time involved. Managers should be fully aware that it will be six months from the time the decision

See **LEDGER** SR/50

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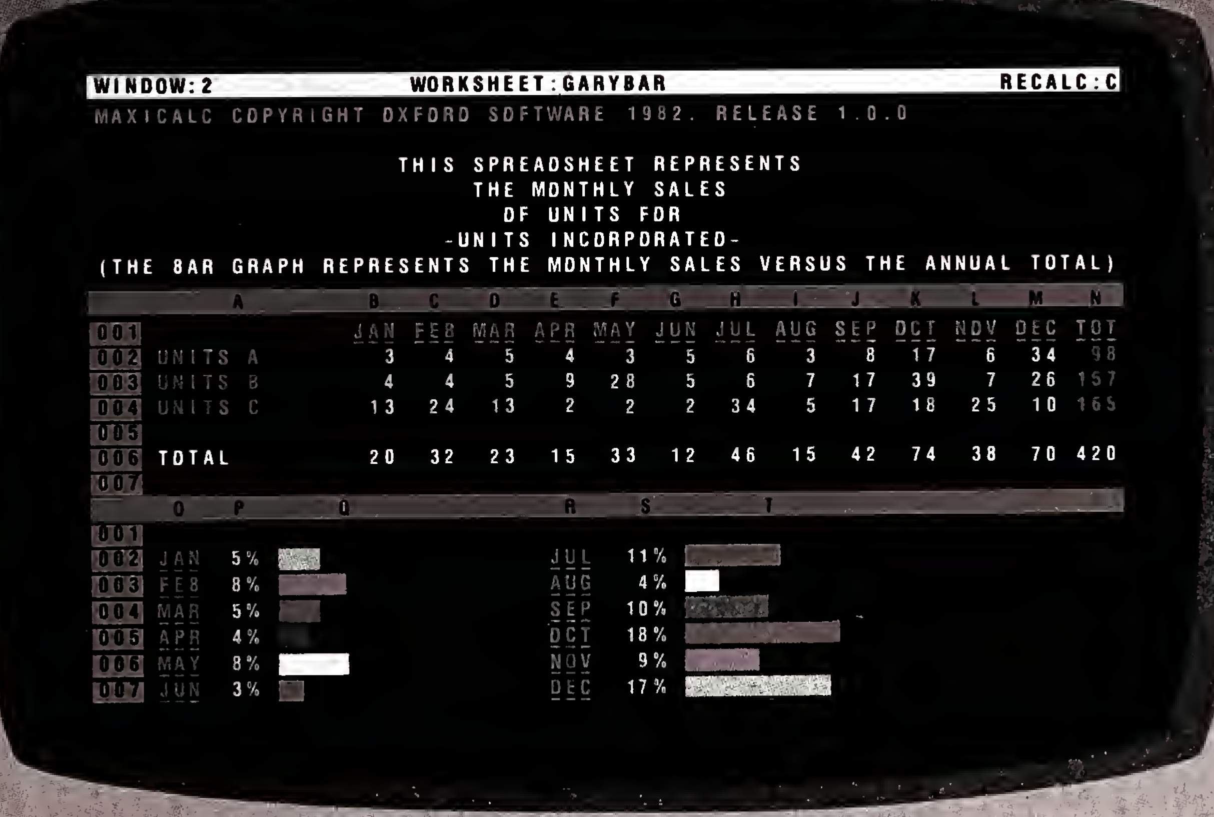

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                            THE MONTHLY SALES
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          A              B   C   D   E   F   G   H   I   J   K   L   M   N
001                     JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC TOT
002  UNITS A              3   4   5   4   3   5   6   3   8  17   6  34  98
003  UNITS B              4   4   5   9  28   5   6   7  17  39   7  26 157
004  UNITS C             13  24  13   2   2   2  34   5  17  18  25  10 165
005
006  TOTAL               20  32  23  15  33  12  46  15  42  74  38  70 420
007
      O    P        Q                  R     S          T
001
002  JAN   5%                          JUL  11%
003  FEB   8%                          AUG   4%
004  MAR   5%                          SEP  10%
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LEDGER

from SR/49

to automate is made to the time they will see any results.

The data processing department should be educated to the basic operating procedures of the accounting cycle.

The accounting department staff members should be educated to the benefits of the automated general ledger. They must be assured that their jobs are secure. Automating their function means many things for them in addition to the acquisition of new job skills.

Identify the system's requirements. It is essential for the accounting department and the data processing department to agree on the total benefits of the product. Compromise is often the order of the day. Typical questions asked by the accounting department are: Does the package accommodate most existing company procedures, codes and account structures? Does it eliminate redundancies and repetitive tasks? Does it provide regular reports in formats most useful to the company? Is it an on-line, interactive, real-time system?

While the on-line capabilities of a general ledger are popular with the accounting staff, DP managers are more concerned with the internal workings of the applications. They ask questions like: Do the packages generate a lot of I/O? How many CPU resources will be needed? Are there recommended cycles for the jobs? How much disk space will I need to allocate? How many DP personnel are required for installation and maintenance?

Delegate departmental tasks. The accounting department should put the manual general ledger in order, and the DP department should search for and evaluate software packages.

The data processing department should search for the ideal general ledger package for the corporation. The requirements are based upon the previously defined needs of both departments.

The departments should work simultaneously for the next two months on their separate projects.

Install and test the package. It should take only a few days to install the software package. This is primarily the responsibility of the software vendor. However, a representative from the DP department will want to know the way the system is installed, where it is located and what other packages can interface with it.

Implementation and testing of the product will take the DP department approximately 2 months. A representative of the accounting department should be available during this time for consultation and evaluation, since some modifications to the package may be necessary. This is where a user-defined system is advantageous. It provides parameters and file structures that do not restrict the user.

Run parallel general ledgers. To ensure the security and integrity of the corporate data, both the new system and the manual and computerized general ledger should run parallel for at least two months.

Compelling benefits

In addition to the basic savings of the manual clerical activities of posting transactions and producing reports, automation of the general ledger to an on-line system has other compelling benefits:

■ A single input of the transaction means automatic posting, first to the relevant subsystem, then to the general ledger and any subsidiary balance sheets and operating accounts.

■ Real-time processing means that data is always current to the last transaction.

■ The accounting department has more control of its data and its schedule of output.

■ The DP department is relieved of many of the programming and maintenance tasks required by batch systems.

■ Reports are available sooner and without taxing the DP programming resources.

■ The accuracy and security of the information recorded in the general ledger is improved.

Kramer is a certified public accountant and product manager for financial application products at Computer Associates International, Inc. in Jericho, N.Y.

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Package helps GTSI team grab Nasa contract

BETHPAGE, N.Y. — When the management contract renewal date for the National Aeronautics and Space Administration's (Nasa) space shuttle program came up last August, Grumman Technical Services, Inc. (GTSI), a division of Grumman Aerospace Corp., teamed up with Lockheed Corp., Morton Thiokol, Inc., Pan American World Services, Inc. and the help of a financial software system to challenge Rockwell International Corp. and its partners for the contract.

GTSI needed to put a management team into action quickly at the Kennedy Space Center in Cape Canaveral, Fla. Automated accounting, job cost and payroll procedures had to be set up within 90 days to handle the 1,000 employees that GTSI would need.

At the same time, the system had to meet the strict reporting and security procedures required by Nasa, according to Stu Cornell, GTSI's manager of data processing.

"We had a tough decision to make. There was no time to develop an entire accounting package for the shuttle program from scratch," Cornell said. Grumman Aerospace has an accounting system running on an IBM mainframe that was designed for over 25,000 employees. "We decided it would be too costly and time-consuming to modify that system for our needs," Cornell said.

Further complication

The situation was further complicated by the uncertainty of the management contract award. "We did not want to buy a computer and get stuck with hardware we don't need," Cornell said. "Leasing the hardware and buying the software was not a suitable option either."

Grumman decided to lease both the hardware and a packaged software system. A month-to-month lease, with an option to buy if the contract was awarded, carried the least risk, but there were very few firms willing to lease a computer system and proven software on a month-to-month basis, he said.

Off-the-shelf applications software from On-Line Accounting Systems, Inc. of Houston was recommended by George Smith, manager of data processing at Grumman St. Augustine, a subsidiary of Grumman Aerospace in Florida. Smith recommended the Fully Automated Management Information Solutions (Famis) accounting package from On-Line Accounting.

"Three years ago, Grumman St. Augustine began operations with 12 employees and projections for rapid growth," Smith said. "We needed to automate our accounting. We had to consider the trade-off between the number of hours it would take to develop a system in-house vs. purchasing prepackaged software."

Grumman St. Augustine needed a personnel file that could handle a wide range of deductions and variations in pay scales for union and nonunion workers, provide instant access to current data and allow for budgeting.

"Most important, we needed a proven accounting package that would be backed by experienced personnel," Smith said. Since acquiring Famis, Grumman St. Augustine has grown to over 450 employees, Smith said. The system now handles over 28,000 general ledger records, with about 1,000 accounts payable checks written every month, labor distribution hours collected from time cards on a daily basis and 450 paychecks written every week.

GTSI contracted with On-Line Accounting to modify the software and lease it and the necessary hardware from Datapoint Corp. with an option to buy if Grumman won the contract.

Major modifications included expanding the job-charging fields to accommodate Nasa's requirements for job costing, rewriting the time-card input and reworking the interface between master files and the general ledger, Cornell said. The system was installed by the end of July 1983, and all modifications were handled by On-Line Accounting staff.

The Lockheed/Grumman/Thiokol/Pan Am team was awarded the management contract for the space shuttle program on Sept. 7, 1983. "We had less than 30 days to be fully operational," Cornell said.

"Despite last minute changes in government regulations and procedures, the Famis accounting package was fully operational by the official start-up date of Oct. 1," he added. A duplicate system was installed at the same time at the GTSI operation at Vandenburg Air Force Base, Calif., where future shuttle flights will occur.

Famis handles approximately 1,000 Grumman employees in Florida and California. It has the capability to handle all types of pay scales, pay policies, deductions and taxes, Cornell said.

"Security is essentially foolproof," he noted. "Each data entry person is assigned several levels of security and can only access data within those security levels."

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CBT maximizes railroad's end-user training

And keeps pace with emergence of info center

ST. PAUL, Minn. — "Two years ago, when I proposed to management that we look into adopting computer-based training [CBT], I had never met anyone who had learned a significant chunk of his job through a computer," said Pat Joyce, manager of training in the Information Resource Department of Burlington Northern Railroad here. "But it seemed a good way to attack computer phobia, and perhaps even computer illiteracy, at Burlington Northern."

> *'Joyce's interest in CBT came about after he and his three-person staff had devoted eight years to training DP personnel. . . . As the company's information center began to emerge and involvement in end-user training began to expand, Joyce saw an additional reason to implement CBT.'*

Joyce's interest in CBT came about after he and his three-person staff had devoted eight years to training DP personnel. Multimedia training joined in-house and vendor-sponsored seminars as the training vehicles most often used. But as the company's information center began to emerge and involvement in end-user training began to expand, Joyce saw an additional reason to implement CBT.

"The information center was one of the end-user groups we initially surveyed regarding a CBT program," he explained. "I had been told that CBT is particularly cost-effective when many people need short-term training, so CBT seemed the ideal solution."

Joyce received the go-ahead to hire Kathy McGovern, a professional whose background in educational design included extensive work in CBT. She headed a four-person formal committee to begin reviewing CBT system software in order to bring its capabilities in-house. McGovern, Joyce, Kurt Haubrich, who was a third training professional, and Rick Perry, a systems programmer acting as the group's technical advisor, were the search group members.

"We already knew that we wanted to look at IBM's Interactive Instructional System and Phoenix from Goal Systems International, Inc. In addition, Scholar Teach III from Boeing Computer Services Co. was also under review," Joyce said.

"Our first step was to request a formal presentation from each vendor and put together an extensive request for written information on each product."

The Burlington Northern questionnaire asked about hardware requirements, installation procedures, CPU impact in multiprogramming environments and testing features. Vendors were asked if they had two authoring systems, one for programmers and one for nonprogrammers; how many current users were involved with the products; and whether customers included other railroad companies. Student registration, vendor-provided training, documentation, product trials, upcoming product development and system costs were other issues addressed by the document.

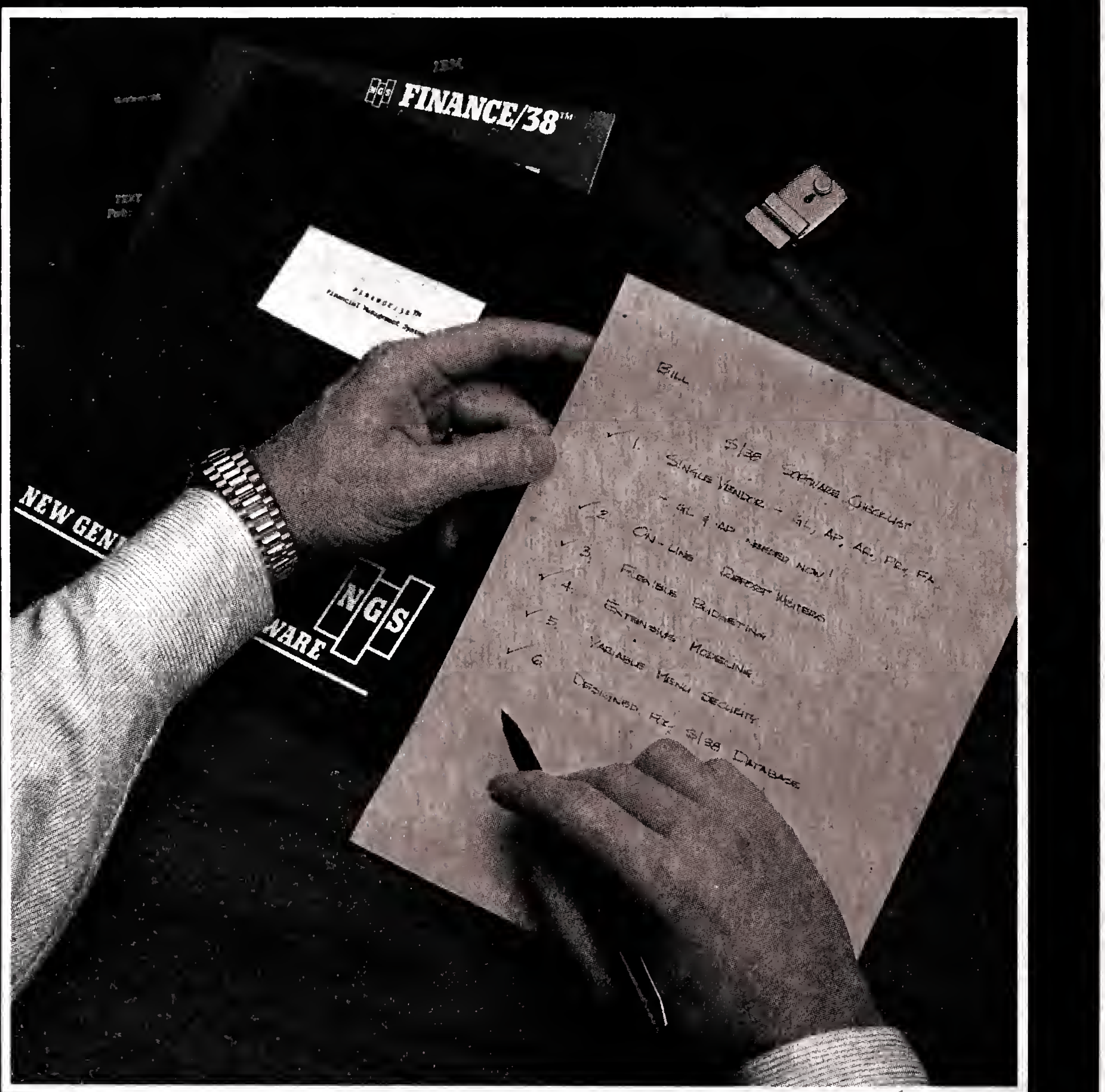
"We asked for a free, 60-day trial of the product," Joyce said. "Our plan was to put each of the three systems through as many hoops as possible, learning the product and then using it to develop a simple course."

The committee found Phoenix had superior editing capabilities, allowing the search group to create and run courses on-line without requiring batch runs, compilations or verifications, Joyce said. A perpetual Phoenix license was purchased in early 1983.

"Our first CBT project was to create a course to teach the marketing

See CBT SR/54

IT ALL ADDS UP!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A view of the claims processing spectrum
Back-end, recording and adjudicating systems

By Jerone N. Deverman
Special to CW‡

Processing of claims for health care employee benefits is an ideal on-line application for companies that self-administer their group health insurance programs and for administrators of multiple-employer trusts, insurance companies and other third-party administrators.

The job of choosing and installing one, however, is complicated by the spectrum of so-called automated on-line claims processing systems that are available.

Not all on-line claims processing systems are equivalent. They can be characterized as either back-end, recording or adjudicating systems (see Figure 1).

Back-end system

A back-end system is one in which results of manually settled claims are keyed to the system, and the system performs remaining clerical functions (in batch mode), producing such things as checks, statements of remittance, explanations of benefits for employees, check registers and other summary reporting.

Generally speaking, such systems handle clerical output chores, but do not contribute in any significant way to actual claims processing functions.

Recording systems are those that provide all clerical functions of back-end systems and also act during claims processing to provide automated recordkeeping and retrieval functions.

Such systems use the computer to eliminate essentially all of the paper that is created during manual claims processing.

Usually, manual work sheets are replaced with one or more on-line terminal displays, and a computerized claims history exists to replace family file folders.

Recording systems

Recording systems provide both clerical functions of back-end systems and file-handling functions. Such systems are still better described, however, as computer-assisted rather than computerized.

The final system category is the automated adjudicating system. It is designed to accept claims information at the same raw level of detail as exists on the claim and the accompanying health care providers' itemized bills and to actually do the adjudication of the claim.

Such systems provide clerical functions of back-end systems, file-handling functions of recording systems and actual claims adjudication functions.

Adjudicating systems afford maximum potential effectiveness in the man-to-machine ratio. They are also the most sophisticated and difficult to design and develop. They typically have the highest nonrecurring costs to select, acquire, install and start up.

They also have higher recurring operations and maintenance costs. However, the labor savings of automated adjudicating claims systems can be expected to more than offset their higher systems costs for sufficiently large-volume claims processing operations and correctly matched claims processing software packages.

Most systems now available are a cross between automated adjudicating and automated recording systems. Most are only partially capable of accepting itemized-bill-level data that is required to drive a truly automated adjudicating system.

Types of automated claims systems

System Type	System Function
Automated Back End	Clerical (output functions)
Automated Recording	Clerical and Files Handling
Automated Adjudicating	Clerical, Files Handling and Processing

Figure 1

Info conversion

Claims processors, with the notable exception of dental claims processors, typically convert itemized procedure-level information to a type of service or benefit level that is understood by the system.

In so doing, the owner of the system is paying for this internal, manual claim-by-claim coding function. Typically, the coding function itself has already preadjudicated the claim because information goes into the system at the benefit level rather than the itemized bill level. The com-

See **CLAIMS** SR/54

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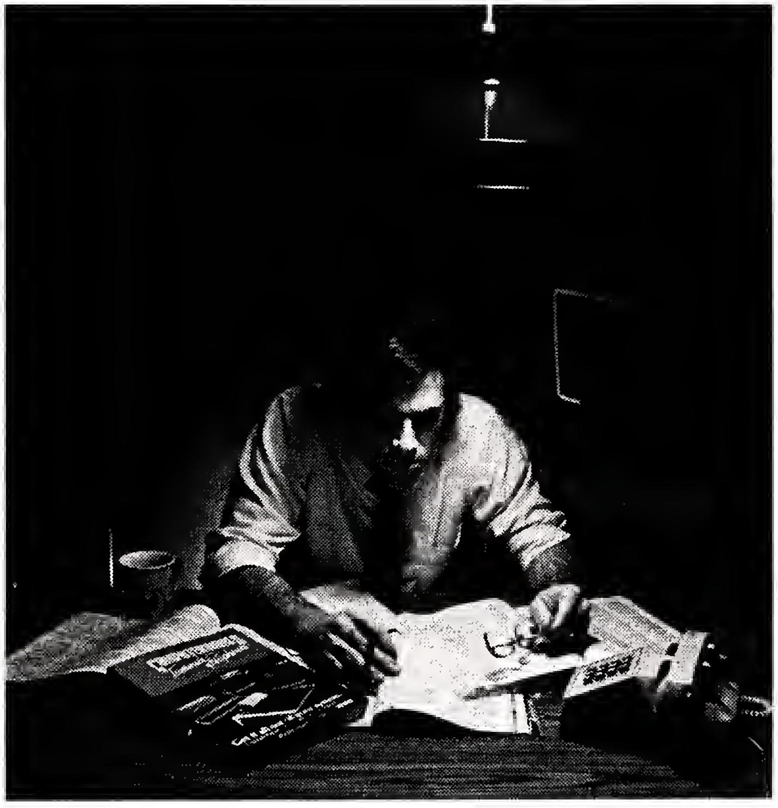

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CLAIMS from SR/53

puter is merely reacting to declarations of benefits by claims processors rather than on itemized-bill-level data of original claims submissions.

In evaluating claims processing systems, it is essential to understand the difference between user-friendly (friendly to users) and non-user-friendly (friendly to nonusers) systems. Most systems marketed under the banner of user-friendly are more apt to be non-user-friendly and are somewhat user-unfriendly.

To the nonuser (typically the high-level buyer, who has probably never processed a claim), on-line systems, which are highly conversational and uncluttered by sparse data displays and small data entry increments, look very user-friendly. In reality, such systems that demonstrate extremely well for these basic nonuser purchasers do not work all that well for the personnel in the trenches.

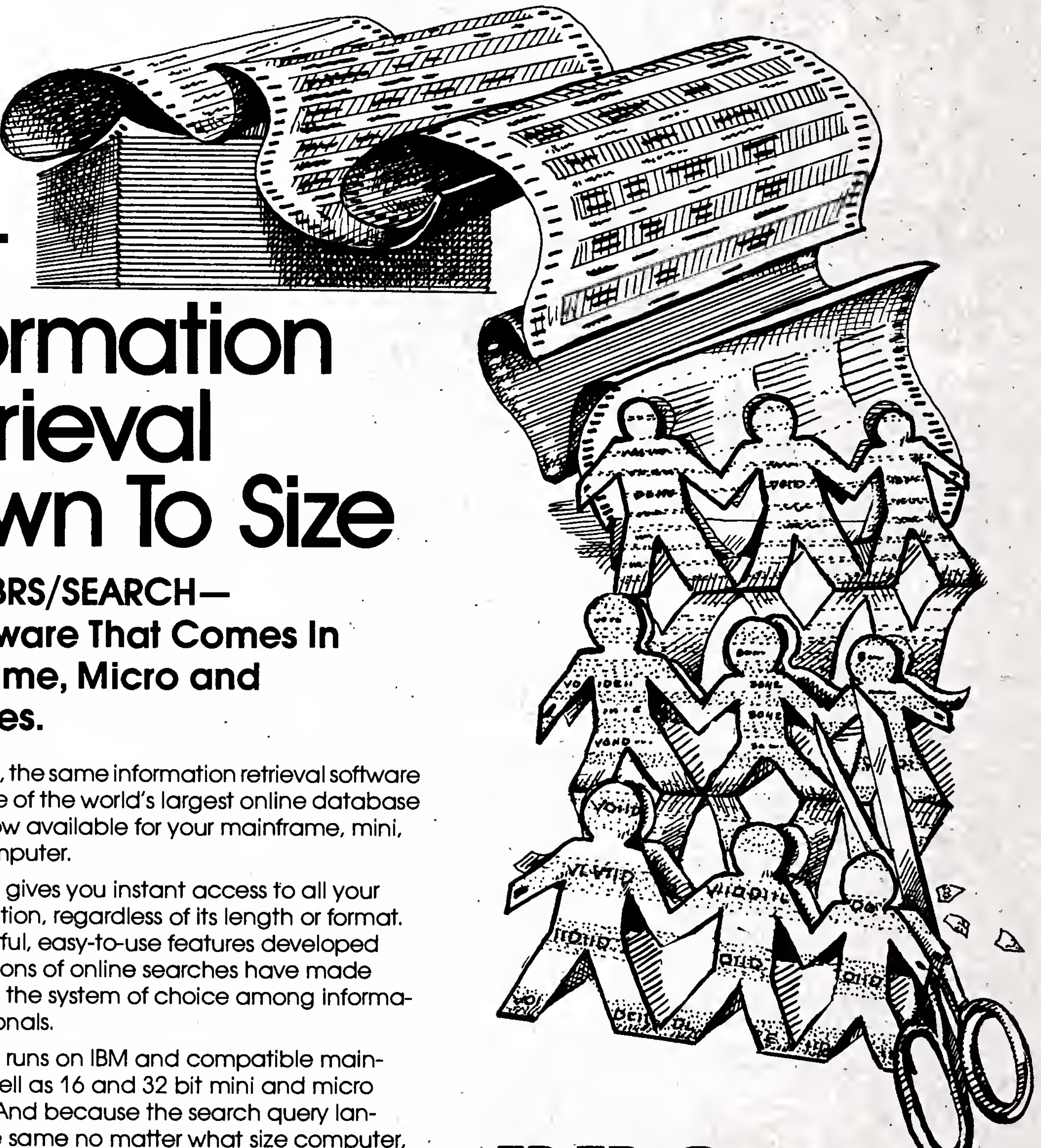
Actual users of high-volume, production-oriented, repetitive task systems want systems that are simple, lean and fast. In short, users who know what they are doing do not want to be burdened with a system that is too slow because of non-user-friendly features.

It is essential that organizations have customized shopping lists prior to looking at systems. Unless internal professionals are available who have expertise in both claims administration and automated, high-volume transaction processing systems, external consulting assistance should be sought.

Changing claims administration systems is something that should be done no more than once every five to 10 years, and it is worth spending up-front money — even prior to beginning a procurement process — in order to improve chances of obtaining the best available system for both current and projected claims administration needs.

Deverman is founder and president of Medical Data Systems, an Albuquerque, N.M.-based consulting service organization specializing in automated claims processing and related information systems.

> *'Changing claims administration systems is something that should be done no more than once every five to 10 years, and it is worth spending up-front money — even prior to beginning a procurement process — in order to improve chances of obtaining the best available system for both current and projected claims administration needs.'*



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CBT from SR/52

department to use a new computerized transportation system," Joyce explained. "This corporate system allows our marketing specialists to estimate the costs independent truckers would incur for various contracts on which Burlington Northern is bidding. By knowing the approximate costs our competition faces, we can be more accurate in our own cost estimates and business forecasts."

Using Phoenix for the first time, McGovern completed the course in approximately three months, including a detailed course evaluation by nine people and error corrections using the Phoenix on-line editors. The course is designed in three parts, each offering about an hour of instruction.

Part one provides general information about how to take a CBT course. Part two presents three detailed case histories, which teach students how to deal with the variables used in cost estimating. Part three continues these problem-solving case histories and also teaches the student how to use reference materials. To date, 20 marketing and rate-setting professionals in the company have completed the course.

As Burlington Northern worked to author its own CBT course, the company also began looking at off-the-shelf vendor courses. An introductory multimedia course on the information center was selected from Deltak, Inc. as the first training a new information center end user receives.

Fifteen to 20 people view this course during a two-hour seminar and group discussion which is held almost weekly. Then, each end user is invited to the training center to learn DP skills. About 500 people have completed this introductory training.

"Six months ago we brought in a CBT course to teach report writing under [Information Builders, Inc.'s] Focus, and today 70 people have learned Focus from that course," Joyce said.

Every Burlington Northern user department has used CBT. "Two years ago, I was not involved in any end-user training at all; today I would say I divide my time evenly between standard application development staff training and end-user training through the information center," Joyce said. "I know the evolution is toward more and more end-user training, which means a larger share of my time will be devoted to CBT."

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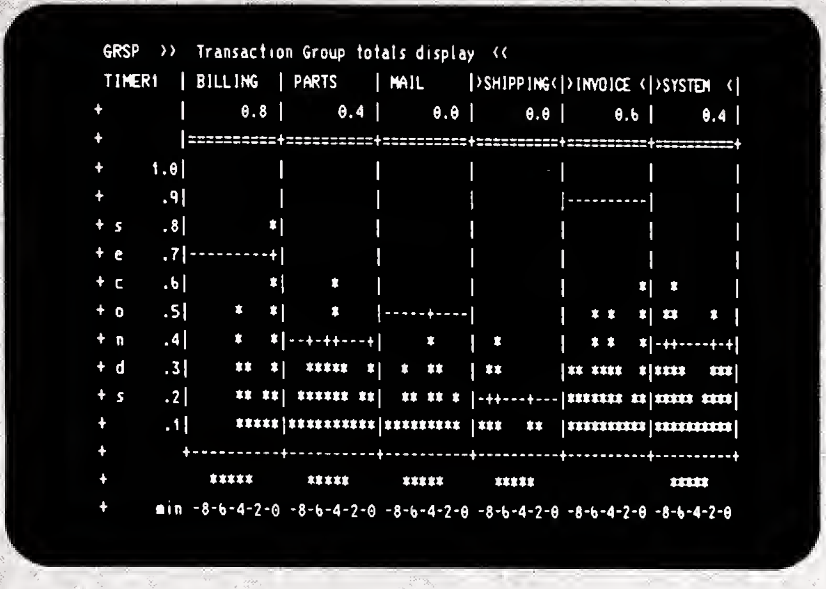

```
GRSP  >>  Transaction Group totals display  <<
TIMER1   | BILLING  | PARTS    | MAIL     |>SHIPPING<|>INVOICE <|>SYSTEM  <|
+        |      0.8 |      0.4 |      0.0 |      0.0 |      0.6 |      0.4 |
+        |==========+==========+==========+==========+==========+==========+
+     1.0|          |          |          |          |          |          |
+      .9|          |          |          |          |----------|          |
+ s    .8|         *|          |          |          |          |          |
+ e    .7|---------+|          |          |          |          |          |
+ c    .6|         *|    *     |          |          |         *|  *       |
+ o    .5|   *     *|    *     |-----+----|          |   * *   *| **    *  |
+ n    .4|   *     *|--+-++---+|     *    |  *       |   * *   *|-++----+-+|
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+      .1|    *****|**********|********* |***   **  |**********|**********|
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```

RTA/IMS' Moving Time Slot Analysis displays "Fixed Window" (right side of screen) and "Dynamic Window" (left side of screen).

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A-212

Programmer's tool kit eases maintenance ills

By Russell P. Seeney
Special to CW‡

Are you maintaining an older application system and unable to find that program a co-worker wrote to patch up the pointer file? Does it take a long time to build that new subsystem — the one the user asked for eight months ago?

The following programmer's tool kit was developed to support a seven-year-old credit union package running on a dozen minicomputer user sites. It may help ease your application maintenance difficulties. The kit consists of the following:

A sorted directory table of contents.

This program searches a disk directory for all source, Job Control Language and text file names. It then sorts these names into alphabetical order. The program then opens each source or text file and prints the first line or identification title line. This listing is now a usable directory or table of contents of all programs on the disk. This is quite handy when you are troubleshooting and looking for a program.

A sorted program listing.

Using the same directory file, list all the programs in sorted order. Put them in binders and label them clearly. Often, interactive minicomputer programmers have a tendency to use their terminals to troubleshoot. Because this approach allows you only to "view" 24 lines of code at a time, you may miss the big picture or other potential trouble areas.

A customer service report (CSR).

The CSR form was designed to capture a description of problems and solutions or actions taken. This helps to identify problems with particular programs or user sites. You can identify steps that were taken the last time the problem occurred.

A key-word search program.

This program allows you to use up to 10 key words or parts of words to search a text file. The types of files for which this is effective would be one-line CSR summaries or the sorted table of contents. By automating the search method, you can reduce the time needed to locate a program or CSR summary.

A pretty print.

This is a structuring engine to rebuild selective programs. One developer actually built a program to align and indent source text built by over a dozen different programmers over the last seven years, each with his own style of coding. This program helped provide a more uniform look to the programs.

A survey guide.

A questionnaire can be developed to make sure that installation at each site will have a minimum number of surprises. This helps to capture some of the "blue sky" the salesman sold. If you have half-a-dozen programmer/analysts analyze the users' requirements, you will get half-a-dozen different requirement definitions. By having your "super" analyst write down all the questions that he would ask, you've got a better chance that all the other analysts using this survey guide will also ask these questions.

A program generator.

In several hundred programs, many functions are common to each. You can generalize each of these functions and put them in a copy library.

Clean up the record format library and generalize the file access schemes. Create an indexed "files definition" data dictionary that contains the characteristics of each file. The generator allows you to "paint" a screen before you commit it to code, and the same holds true for the report generation functions.

Most systems have some type of copy library function, a screen builder and a report generator. The difference here is that the generator binds all of these "independent" functions into a single interactive work session.

This tool kit has been evolving over the last four years. In order to have a chance at keeping up with the demand for computer usage, don't become static in the development of new tools.

Seeney is a DP consultant in Honolulu.

Packaged tool allows for growth

NEWTON, Mass. — The Shipley Company, Inc. is a leader in sophisticated surface chemistries, providing products and systems for printed circuits, microelectronics, plating on plastics and metal finishing applications.

As demands for Shipley's highly technological solutions to chemical problems increased, the company turned to computer systems for day-to-day business operations. Several years ago, the company installed an IBM System/3, which later was replaced by a Honeywell, Inc. Level 62 minicomputer that relied chiefly on "homegrown" software for the accounting functions.

It soon became evident that the software developed in house was too complicated to maintain. It also did not provide the flexibility needed by the accounting department to keep pace with the company's continuing success and expansion. Following a search for a packaged software solution, Software International Corp.'s General Ledger and Financial Reporting System was selected.

"Shortly before I joined the company, I had been involved in a comprehensive evaluation of the leading financial application packages, including Software International products," said Joseph A. Merchant, Shipley DP manager.

"Since Software International had a system for Honeywell Level 62 equipment, there was no need to go through a complete evaluation again, and we installed the Software International package. The decision to go with a packaged system also eliminated the full year's development time which the in-house group estimated would be needed to create an automated general ledger," Merchant said.

Within a 60-day period, Shipley was operational with the Software International General Ledger, and six months later the company completely cut over from its old manual system. The accounting staff, by taking advantage of the package's variable report writer feature, gained flexibility because staff members could design report formats any way they chose.

"About a year later," Merchant said, "as the IBM System/38 was about to be announced, Software International mentioned plans to drop support of the [Honeywell] 62 packages. However, Shipley was changing to the IBM System/38, so we worked out a plan to take advantage of the new computer's unique architecture and capabilities."

Merchant said that, as presently installed, the General Ledger package provides flexibile product line reporting. The system is structured to mirror Shipley's product line organization accurately. Traditional profit-and-loss statements are provided vertically, and by using a matrix base, each product line is exploded. The chart of accounts and relationships file provides 10 levels of related accounts so that accountants can quickly post to the system, and all transactions are traced throughout the entire chart of accounts.

Prior to implementing the software package, the in-house system could handle less than 1,000 separate general ledger accounts. Today, Shipley has 10,000 accounts,

See LEDGER SR/58

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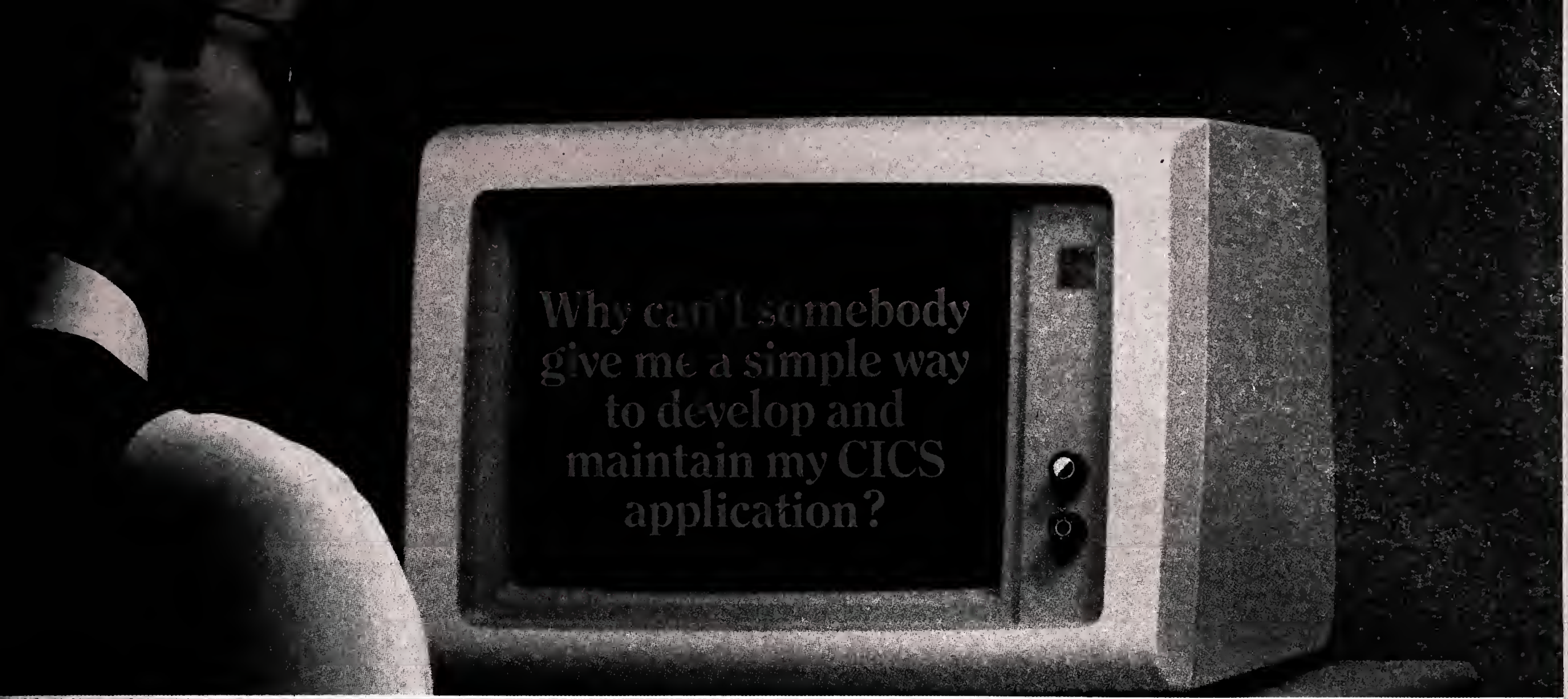

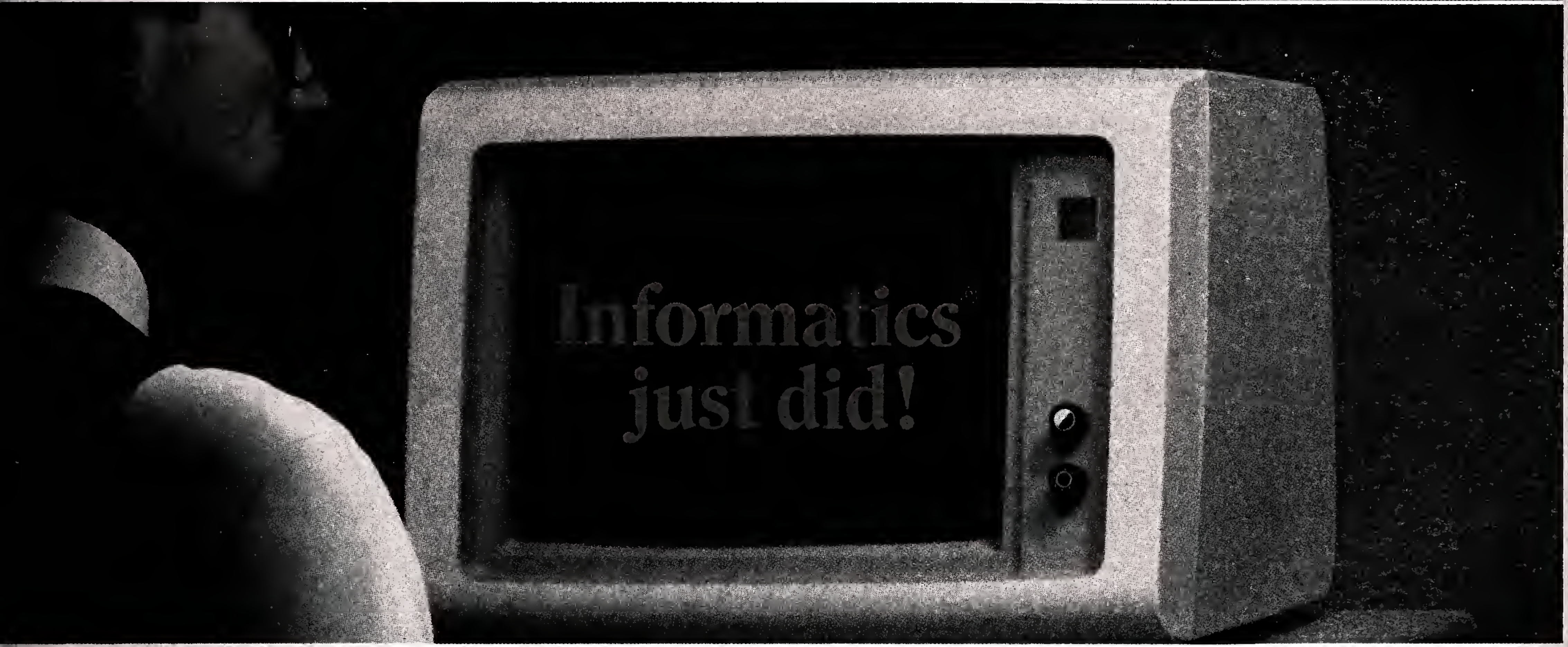

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Financial package increases user control

HOLMDEL, N.J. — Software vendors are used to the cautious analysis and painstaking research that always accompanies the selection of general ledger software. But, when the potential user is a software company, the supplier must be prepared for an extremely rigorous review.

When CGA Computer, Inc., a $33 million software products and consulting firm here, decided to upgrade its financial applications systems, the firm sought proposals from outside sources rather than devoting resources to develop packages in-house. However, the firm was not hesitant about devoting some of its software talent to ensuring that the best package was chosen.

"Principally, we wanted a package that would reflect current design techniques and allow for rapid expansion," said Peter Orenchuk, manager of internal systems and group leader of the selection team. "We did not want an old system that had been patched together to be everything to everybody."

Because of its user features and its ability to run on-line, CGA selected Computron Technologies' CAS/IV general ledger, accounts payable and accounts receivable systems. "One of the biggest features of the system," Orenchuk said, "is the control given to users. They do not have to understand how the system works because it comes with excellent inquiry techniques. Virtually all questions are answered on-line and within the program through interactive help facilities called Q-Mark and Q-Select."

Since practically all of CGA's more than 450 technicians are either on assignment or supporting their own software products, Orenchuk knew he would have a lean applications support team. "It was a plus that the products installed easily and required relatively little support or customization," he said. "Two days of training were all we needed. Within six weeks, we were parallel testing our financials from the beginning of our fiscal year.

"During that time, we generated 160 different reports from scratch. If those reports had to be programmed, we're talking months and months of programmer time."

Once the first run was completed, Orenchuk went to Bruce Posner, controller of consulting services, to get his reaction.

"The bottom line was that their system worked with very few glitches," Posner said. "I was able to cut closing time from five days to four. As far as I'm concerned, that is outstanding."

LEDGER from SR/56

and it generates financial statements for four product lines. Because the company now has worldwide operations, the system is being used for currency conversions.

"We often refer to our Ledger as living software," Paul Hoiriis, corporate controller, added. "As the company keeps expanding overseas, our requirements change.

"By allowing the accounting department to operate on its own, we can provide up-to-the-minute information without excessively burdening the DP department. By using the variable report writer, DP is also not saddled with extra documentation chores.

"The Software International Ledger is on-line, therefore we put a terminal directly in the accounting department.

"We also plan to install a dedicated printer in accounting, and they will not even have to depend on DP for hard copy of their reports," Hoiriis said.

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On-line system keeps subcontractors in check

AUSTIN, Texas — Underpay a subcontractor and he'll let you know loud and clear. Overpay him and you'll usually be able to get your money back — with some delay and embarrassment.

However, two firms that subcontract most of their work experience few of these payment problems because they use an on-line accounting system which includes subcontractors' status reporting.

"We are brokers of other people's services to the owner," explained Dee Lindley, president of the Ausland Construction Co., Inc. here. "We subcontract as much as we can and have a minimal field force, which is supervisory in nature. Our 'substat' report keeps us up to date as to the status of each subcontractor's program," he said. "It is instantly available, and if we have updated our cost data that morning, then our reports are current."

Ausland's system is Interactive Management Accounting Generator (Imag), an on-line construction software package written by D&S Systems, Inc. of Memphis. Designed primarily for NCR Corp. systems, at Ausland it runs on an NCR 9020 with 10M bytes of disk storage and two terminals.

At the George Sollitt Construction Co. in Wood Dale, Ill., and Seattle, "We sub out about 75% of our work," explained Controller Alfred F. Zabinski Jr. "We use Imag's subcontractors' status report, which maintains each sub's history for the life of a project. We have jobs that cost up to $17 million and last about three years." Sollitt has automated its costing and accounting procedures on an NCR 9020.

"In the past, we had a punched-card computer for accounts payable and payroll only," Zabinski said. "It took us three weeks after month end to get our general ledger posted. Now it's completed within four days."

Sollitt's Seattle office has an NCR 8150 minicomputer with a CRT and can tap into the same current job-cost and subcontractor status information as the four CRTs in Wood Dale. The 8150 transmits payroll data to the 9020. After processing, it sends back report and check information to be printed on the Seattle machine. This communications link has operated on a dial-up basis since December 1981.

Terminal display

"We can now give a project manager or a customer information such as job cost to date or labor cost to date while he waits on the phone, just by displaying it on a terminal," Zabinski said.

About 75% of Sollitt's jobs are bid and the rest negotiated. Usually the $40 million-a-year concern does its own concrete work then subs out the rest. It employs up to 300 workers during peaks.

Sollitt's Imag comprises payroll, payroll reports, job-cost reports, subcontractor status, accounts payable, accounts receivable, general ledger and fixed assets.

"Once a cost is keyed in, it immediately goes throughout the system updating everything it should," Zabinski said. "And we can get the information out easily, either in detail or in summary form."

At Ausland, the Imag modules include payroll and reports, job cost, subcontractor status, estimating, check reconciliation and general ledger. But the most important application is job costing, according to Lindley.

About 80% of Ausland's work is in negotiated design-and-build projects in the $400,000 to $700,000 range.

"In dealing with subs, Imag and the computer won't write a check for too large an amount, for example. They just won't let us overpay somebody," Lindley said.

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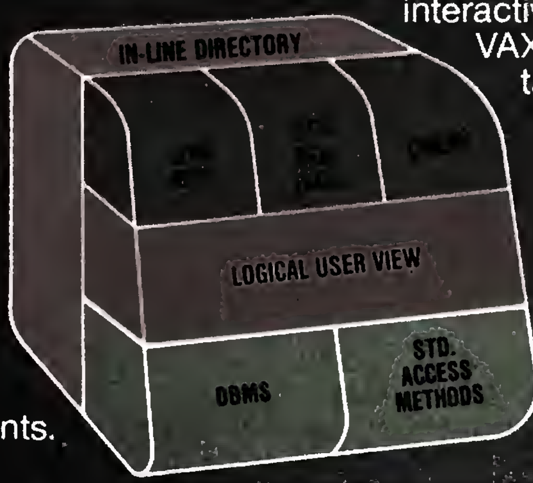

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Detailed evaluation key to package selection

By Terry D. Deppe
Special to CW‡

If you begin with the assumption that selecting a software package will provide a quick and cost-effective solution to tight deadlines, large backlogs and slim programming budgets, you are a prime target for the marketing sales pitches and a potentially unsuccessful project installation. Software vendors thrive on this type of environment to turn a quick sale.

As a result, these packages are given to the client, and their successful installation is dependent on the client. Then the client tries to make the software packages fit the business needs of the corporation if, indeed, the business needs have been defined. This thorough evaluation is the first and most important step in avoiding missed deadlines and overrun budgets.

The first step to a successful project is to get upper management to support the project without dictating unrealistically tight time schedules and budget restraints. Management should understand that a successful installation requires an appropriate time and money commitment. A detailed work plan depicting the project team's process should be presented to upper management prior to beginning so that management will understand and appreciate what is involved in a major installation. This plan should include input from both data processing and full-time user personnel.

Another important ingredient is to have an active working review committee on hand that can speak for the areas to be affected by the new package.

Step two is to send a "request for information" with the general requirements you are trying to address to potential vendors. While this correspondence is progressing, the project team should develop a detailed set of user requirements for the new system.

These requirements do not address the solutions or the "how to," but only the specific user requirements.

The review committee established for the project or projects should be intimately involved in reviewing, agreeing on and approving the developed user requirements. These requirements are developed through extensive interviews in the user community and from expertise on the project team.

When looking for an integrated system, the final step is to combine the requirements of each subsystem into an integrated evaluation criterion. Now you are ready to begin evaluating software packages.

Know potential packages

The project team should become as familiar with potential vendor software packages as possible. This can be accomplished by reviewing the material returned in response to your request for information, attending vendor software package seminars and investigating vendor documentation on the software packages.

When your project team is thoroughly versed on your business requirements and the potential vendors' materials, it is time for an intensive questioning period with the potential vendor. Invite potential vendors to participate in the session, and instruct each vendor to have its technical staff available for this process.

Each vendor should be asked if the requirement can be met and to explain specifically how its package would satisfy the requirement. The "how" is as important as the "if" because of the inefficiencies or problems which can be caused by inappropriate solutions.

After narrowing the field to a few vendors, a final analysis should be conducted. Client interviews, a vendor home-office visit and the execution of a test case developed by our project team are good techniques. Obtain a client list from the top two vendors, and request visits to six of their clients in similar lines of business. The remainder of the project team may conduct phone interviews with the remaining clients.

The last step, which could prove to be the most important, is the execution of a sample test case. Most vendors are not prepared to do this, or they will want to execute their own "canned" test case. A good test case could take as long as a week to execute, but the time is well spent.

With this thorough analysis, the project team should be able to make a recommendation to upper management. Once upper management gives their approval, it is time for contract negotiation.

Make sure you negotiate every substantive item up front and include it in the contract. The client has much more leverage before the selection and negotiation process is completed and the contract signed. Clients should understand that a standard vendor contract is only a starting point for negotiations.

Deppe is manager of the financial and accounting systems at Valero Energy Corp. in San Antonio, Texas.

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★ ★ ★ The Goal News

LOGICAL beats PHYSICAL

For OS/VS

LOGICAL DUMP/RESTORE OFFERS VAST PERFORMANCE GAINS

We are pleased to report that the people who have tried FAVER/XP, the "smart" backup/restore system, are pleasantly surprised at the difference Logical makes.

Most people are used to a physical-design dump & restore system. To backup a single dataset across a number of packs, they have to physically back up each pack. The logical approach of FAVER/XP lets the system back up just the dataset you want, no matter how many volumes it occupies.

You can back up clusters, groups of clusters or an entire catalog this same way. It's much easier with FAVER/XP and everything happens faster.

Plus, FAVER/XP integrity-checks all VSAM datasets for errors before it backs up anything. If it finds anything, you know about it. If everything's OK, the backup runs automatically. You can rest easy that your backups are clean.

Just to be sure, though, you can invoke the COMPARE function to ensure that the backup tape contains exactly the same data as the disk.

VSAMAID/XP creates the only complete VSAM dataset management system available today.

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FAVER/XP beats IDCAMS

In benchmark tests where an OS/VS installation runs backup & restore routines using IDCAMS and FAVER/XP, FAVER/XP completes the tasks required in half the time.

These figures are taken from actual timings made by product managers at Goal Systems International, the authors of FAVER/XP. They cover 100 product installations spanning five years of operation.

"The difference in speed is due to a systems design that combines the speed of a physical dump/restore with the design philosophy of logical file access," said Theodore Pepper, Chief Developer at Goal.

Users amazed at the difference

When polled by this newspaper, users of FAVER/XP revealed that the Logical approach to backup & restore is genuinely faster, more accurate, and easier to perform.

Ralph T. Bryan, Systems Manager at Turbo Rubber Company said, "Here we had been operating all these years working our tails off just to do an accurate backup & restore. And FAVER/XP comes along and automates the task. It's about time.

"We had depreciated away our investment in our old physical dump/restore system years ago. It was time to buy FAVER/XP. We even ran 'em both for a few months, but now FAVER/XP is our standard."

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Goal Systems International has revealed that they have an interface between the FAVER/XP Backup & Restore system and the VSAMAID/XP system which creates the only complete VSAM dataset management system available today.

During backup, the FAVER/XP special interface creates a historical file, which may then be used by VSAMAID/XP to create a "recommendations" report. The report tells resource managers how to manage VSAM datasets for optimum space allocation and resource utilization. VSAMAID/XP recommendations may be implemented with one command through the FAVER/XP Auto-Delete/Define facility.

FAVER/XP and VSAMAID/XP are great news for OS/VS installations. They are two of the Extended Productivity Systems from Goal Systems International. Both are available for a free trial. Call Goal Systems toll free today.

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Risks of custom-designed tools cataloged

By Jan Huffman
Special to CW‡

Recent substantial awards for damages against a major computer manufacturer because of its failure to deliver software that worked as promised have pointed out the risk involved in the use of custom-designed software.

The awards further demonstrate that this risk is as great when the software is developed by a supposedly competent system design house as when the user's own programmers write it.

The decision to use custom-designed software must be based on total trust that the person making the promise to create the software will do so in the expected time frame and for the expected cost.

Performance must be good enough so that a day's work can be done in a day, without adding personnel or computer hardware. Few professional system design houses can deliver all this. An organization that is not professionally developing computer systems can hardly expect to do as well.

Fortunately, it is no longer necessary to rely on custom-written software. Industry-standard operating systems such as Unix and Digital Research, Inc.'s CP/M have provided software developers with a large enough market for their products that they can afford to have software on the shelf.

A prospective computer user can now see his proposed system in operation before he invests in either software or hardware. He can see the functions it performs, how easy it is to use and its speed and flexibility. He can also size up the support organization behind it, which is one of the most important considerations in choosing a system.

Vendor dependence

A user of any computer software, whether custom or packaged, is highly dependent on the software vendor for training, maintenance, problem resolution and enhancements.

No business can trust the control of its operation to a system backed by a computer store specializing in games. Instead, the prospective computer buyer should look for an organization dedicated to a consultative approach to selling business systems, in which the dealer will analyze the organization's operations and recommend an appropriate system.

A prospective computer user should also demand that one party take responsibility for the computer hardware, software and support. The price of computer hardware and packaged software belies their actual complexity. Together, hardware and software compose a single system, and only a computer systems professional is qualified to analyze how they work together.

In fact, many good computer system organizations simply will not sell hardware and software separately since they must know both intimately in order to properly support their customers.

Custom-designed problem

When software is custom-designed for a user, probably no more than three people know how the system really works. Turnover of DP personnel is remarkably high, and even if the programmer stays within the same organization, he may have forgotten a lot about how your system works when you call for help.

The only realistic solution to this problem is to use packaged software and to make sure you are using an up-to-date version.

Reputable business software publishers maintain a staff of support personnel that understands the software. If your revision is more

See **RISK** SR/64

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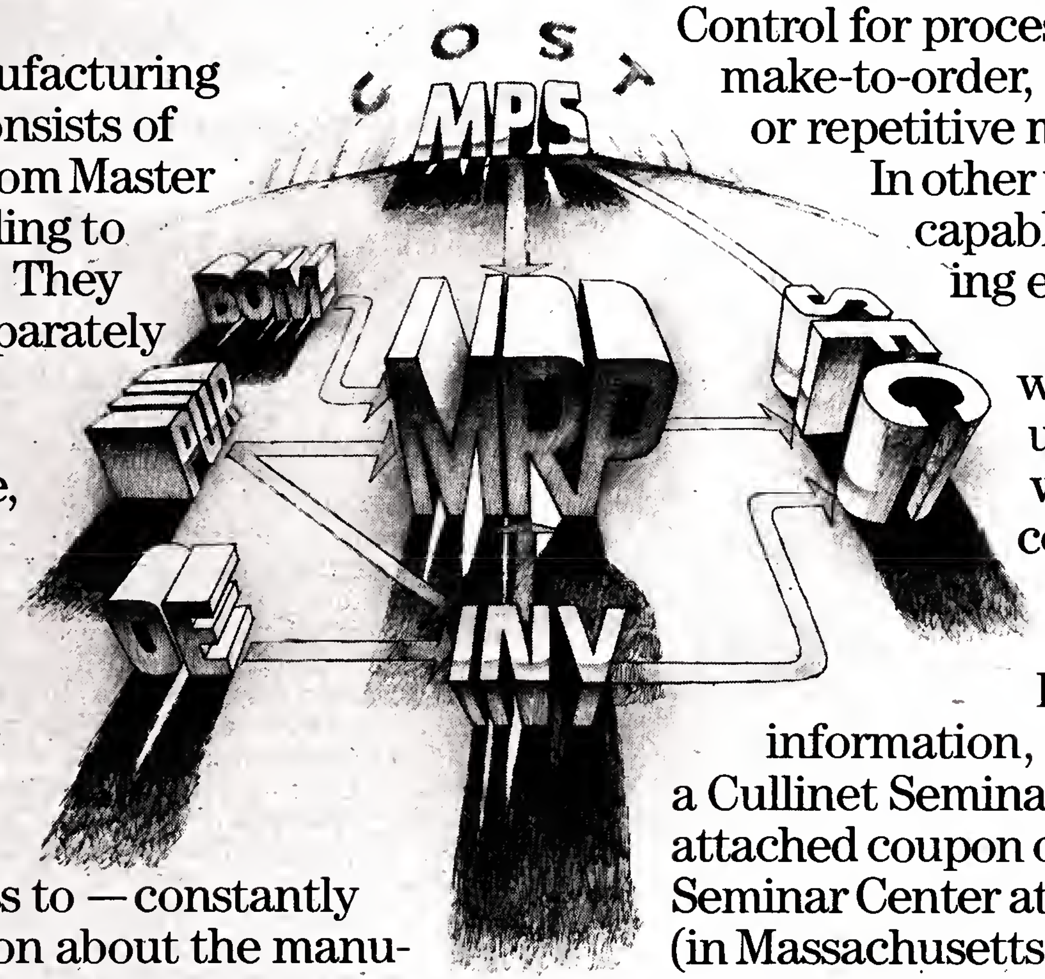

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Manufacturing: Cullinet

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My Top Management Is Impeding Company Growth.

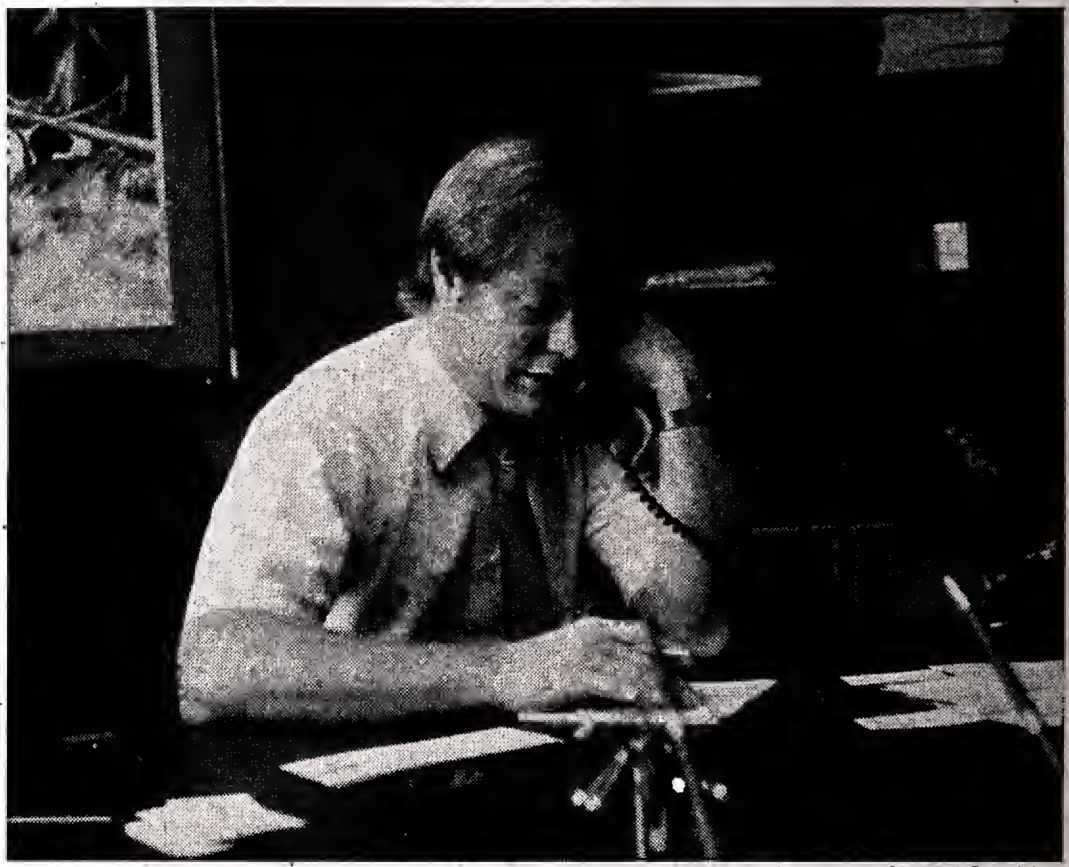
Top managers must think programmers grow on trees.

Every time a top manager comes around with an urgent request for information, I have to pull somebody off another job and put them to work writing code.

After I give my top managers what they want, nine times out of ten they come back and tell me they've changed their mind. They want the information in a slightly different format or with a few additional items thrown in. And then they've got the nerve to complain about my maintenance costs!

I'm not saying top managers don't have valid requests for information. I am saying that I'm working with finite resources. Every additional fire drill means something else gets put off. I'm nearly a week behind right now just updating my database.

How do I feel about top managers? I think we ought to lock them in the executive washroom for a month to give me time to get caught up.



Source: J. Pascal, Inc.

Al Parkinson, vice-president for information systems at J. Pascal, Inc.

Retail chain joins DP,

MONTREAL — At J. Pascal, Inc., a chain of hardware and furniture retail stores based here, C. Emmett Pearson, vice-president for finance, and Al Parkinson, vice-president for information systems, have adjoining offices in the company's executive headquarters.

The proximity of these two executives is hardly coincidental. Rather, it typifies the way Pascal is interrelating its financial and DP operations. It is also indicative of the ways Pascal is creating new computerized approaches to financial records, reporting and management systems, as well as how it views the creative use of generic software packages.

Pascal, founded in 1903, has grown over the past 80 years into one of eastern Canada's leading specialized retail and wholesale chains. With annual revenues at $210 million, the company operates 23 hardware and hard-goods stores in Quebec and Ontario provinces, four furniture showroom and warehouse outlets serving principal cities and a newly opened furniture showroom in Quebec City.

New procedures

Managers are introducing new administrative and financial procedures that place priority on the need for incisive and timely information in all phases of Pascal's operations. According to Pearson, the creative use of computerized systems is helping to make Pascal's management style even more effective. All major systems interface with the general ledger, from which all top management reports are produced.

In its headquarters here, Pascal operates a Honeywell, Inc. DPS 7

RISK

from SR/62

than a year out of date, don't expect the support people to know its details. The publisher's support group is most often a backup for the dealer's own support group, which should be the first contact if you need help.

A great temptation for a prospective user of a software package is to ask that "a few changes" be made to it. This is probably the biggest mistake the buyer can make. He already recognizes that the package is appropriate to his business. What he doesn't realize is that any change made in the system will probably render his software incompatible with new revisions issued by the publishers.

He will not only be unable to take advantage of enhancements provided in subsequent revisions, but he will lose the backing of the support organizations set up for him by both his dealer and the software publisher. The prospective user must weigh the great cost of this loss of support against the economic value of the changes.

Instead, it might make more sense to choose a different package. Software packages are now available that provide options to accommodate different ways of doing business, all within the capabilities of the package. Likewise, business software packages exist that incorporate ad hoc query languages, user-definable report writers and spreadsheet and graphics interfaces.

Other considerations for the use of software packages are implementation time and cost. Development of custom software requires detailed system design, programming and documentation. These are immediately available with packaged software, and, in some cases, training can often begin even before the hardware is installed.

The above issues are far more important than the difference in cost between custom and packaged software. In fact, for all the above reasons, using an appropriate software package, even if it costs more than custom software, may be the wisest choice.

Huffman is vice-president in charge of product development at Absolut Systems, Inc., a Boston software development house.

Source: J. Pascal, Inc.

C. Emmett Pearson, vice-president for finance at J. Pascal, Inc.

financial operations

computer, a Level 64 computer and two Level 6 minicomputers, along with groupings of Honeywell terminals. The four retail furniture warehouses and showrooms use Honeywell Level 6 minicomputers to control stock merchandise. Data in the DPS 7 computer is maintained with Honeywell's IDS II data base system.

The close management ties between Pearson's financial services and Parkinson's data processing department are manifested in the numerous ways they integrate financial requirements with automated systems.

"The primary purpose of computer systems at Pascal is to provide management with the tools to control two essentially different operations — furniture and hard goods," Parkinson said.

Update data base

It is important that information from inventory and other systems be fed into the general ledger financial data base that is used in preparing reports for Pascal management. The goal is to maintain low, yet adequate, inventory levels as well as to get stock to where it is needed and to have adequate supplies in both warehouses and stores. Pascal's installation of several financial programs is demonstrated in this new management reporting strategy.

In early 1983, the company purchased Final IV, a general ledger and financial management system developed by New York City-based Mingham & Oellerich, Inc. In its selection of a suitable system, Pascal established a number of rigid requirements, Pearson said.

The company, intending to concentrate the use of its programming staff in retail inventory, warehousing, delivery and point-of-sale systems, required a general ledger system that would function with little assistance from the programming staff. While it recognized that retail systems constantly change due to the introduction of new technology in store automation, Pascal sought a general ledger and financial management program that was easy to maintain.

The retail chain set several interrelated objectives for financial reporting and its integration with the Final IV general ledger system. It had to increase the speed with which financial reports could be prepared and have the ability to generate special reports based on "what-if" questions. For example, if a lease was to be renewed at one store, Final IV would have to prepare break-even analysis reports that would enable Pascal management to decide whether it should renew the lease, close the store or perhaps move the store to another location. In addition, Pascal expected that the financial system would help reduce the size of the assigned clerical staff.

Pascal was confident that a general ledger system could handle the routine entry and recordkeeping functions, but it looked to Final IV to produce financial and related management reports as well. Similarly, Pascal wanted to avoid installing a separate financial modeling system, so the general ledger software needed to be flexible and powerful enough to accommodate this growing requirement.

Accounting language

Pascal said Final IV met the firm's requirements because it generates special reports through its Natural Accounting Language (NAL), which gives the accounting department the ability to create computer reports without the intervention of a programmer.

NAL enables financial managers without computer experience to create special reports, such as cash flow, sales analysis and inventory position as well as one-time reports that can show, for example, how much the company spent for car leases for its salesmen.

Final IV also prepares the standard array of general ledger and financial reports, including profit and loss, balance sheet, expense reports, budget reports and cost center analyses.

My MIS Director Is Impeding Company Growth.

Every time I want to get information out of our computer, here's the process I go through.

I submit a request to MIS.

Sometimes they're back to me in a flash, sometimes I wait an eternity. There's no predicting.

For an answer, they give me a ream or two of computer listings that I can't understand.

I sort it out only to find that MIS misinterpreted what I wanted. I got the wrong information, and I'm right back where I started.

In the meantime, the competition's making mincemeat out of my sales force.

I'm ready to hang my MIS director from the nearest tree.

General ledger helps company pick up pace

HALIFAX, N.S. — To keep pace with its growth, an insurance company here has installed a general ledger system which has allowed it to maintain up-to-date figures and budget quarterly instead of annually.

When it mushroomed from a small insurance company to a large one in just five years, Maritime Life Assurance found that its 25-year-old accounting system could not keep pace with its growth.

"Before, it took forever to get cost summaries," according to Mary Holmes, who serves as budget controller at Maritime Life's Halifax headquarters. "Now we don't have this problem. The new quarterly cost statements require no manual calculation and can be interpreted at a glance."

After evaluating financial packages from several software vendors, the Canadian insurance company purchased the Management Science America, Inc.'s (MSA) General Ledger System in October 1981. On Dec. 17, 1982, the system was up and running.

Maritime Life's accounting department can now track product sales, complete cost reporting each quarter and maintain up-to-date figures.

Maritime Life's old accounting system, which was developed in late '50s, initially had an account structure that was easily understood, but its logic was lost over time.

In addition, the company's old card system was limited to handling $99 million, despite corporate assets totaling over a billion dollars.

Although the old system's reporting was adequate, changes presented major problems. According to Harrison Robbins, comptroller and project manager for Maritime Life's new accounting system, "it became rather cumbersome."

Maritime Life's target was flexibility. The company also wanted a system that was effective, easy to change and responsive to its expansion needs. The company was especially interested in features such as ledger and customer reporting, account reconcilement, automatic accrual reversals and automatic recurring entries. "We knew what features we wanted, so we went for it," Robbins recalled. "We tried to implement as many as possible at the outset."

Accounting tasks

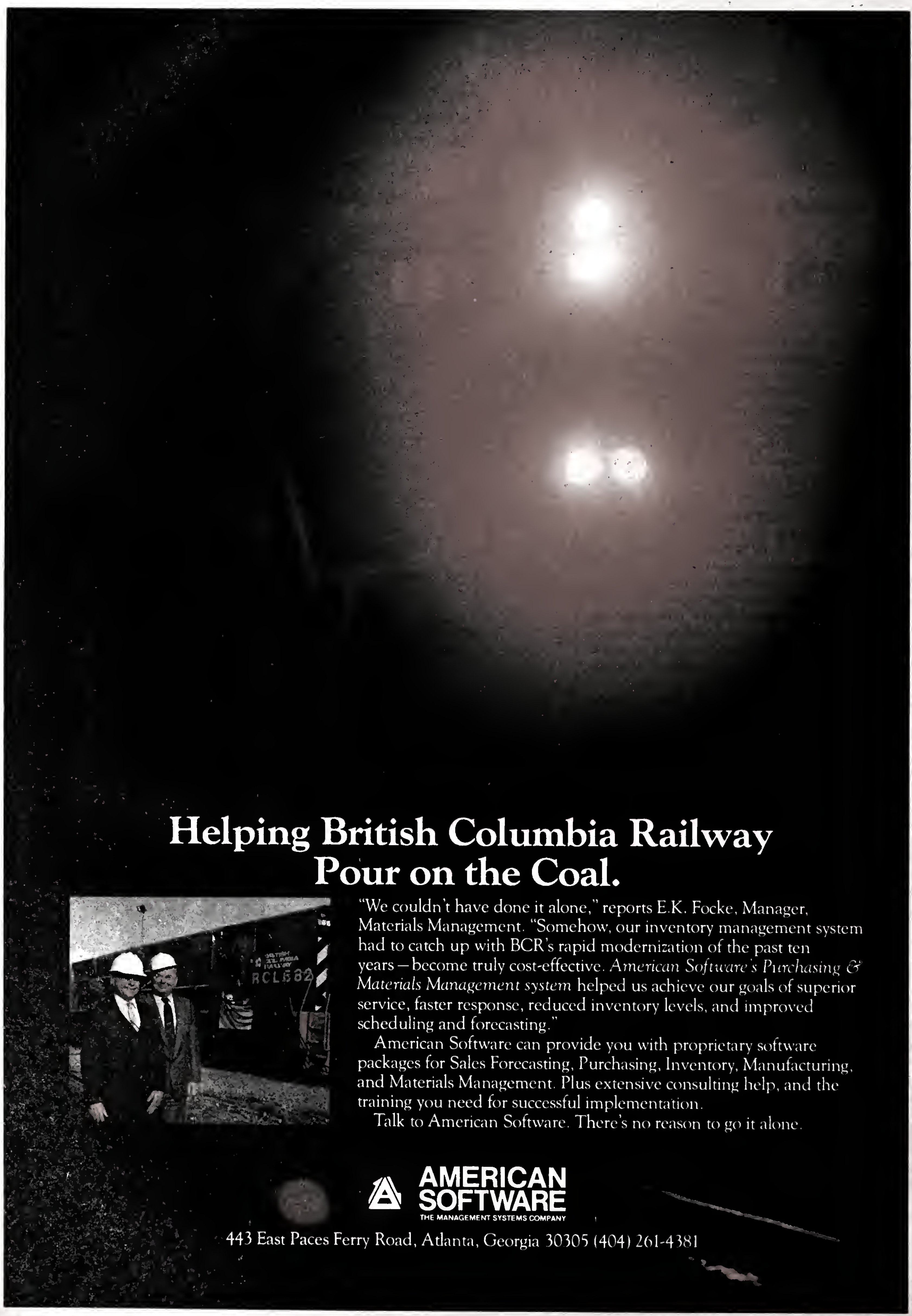
After Maritime Life's project assistant Marg Huxtable documented the old system, she interviewed people about their accounting requirements. Edith Rick, systems analyst, evaluated each accounting task, preparing to interface the new package with the administrative systems of the group and individual insurance areas. During this time, she reduced 80 computer accounting jobs to 10.

In October 1982, Wendy Paterson, test coordinator, began directing full-time testing. The purpose was to run operations through the old and new systems, comparing results. "Parallel testing lasted 2½ months and went right on schedule," Paterson said.

"Installing the package was the easiest part of the process," Robbins said.

According to Holmes, the greatest gain is in budgeting. For the first time, Maritime Life can budget quarterly instead of annually.

Monthly reporting gives Maritime Life more accurate expense reports. "With the old system, if anything was in error — like booking something to the wrong center — nothing could be done. Now, with the expense report, we can see what's missing and clean it up right away. The result is no surprises at quarter end," Holmes noted.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Library use up 10% with on-line system

MENOMONIE, Wis.— What may be the only library in the state with an integrated circulation, catalog and acquisition system has increased its usage by 10% in the past year.

The 200,000-volume library at the University of Wisconsin-Stout moved into new quarters in January 1982 and went on-line with an automated catalog, automated checkout and check in and automated acquisition of new materials a year later. Student and staff use grew in the months that followed.

"Our use is up 10% over a year ago, and I believe it is due to a combination of our having a new facility and an on-line catalog. It's much faster, much more efficient access to bibliographic information," according to John Jax, assistant dean of Learning Resources.

The library uses Data Phase Corp.'s Alis II software package on a Data General Corp. S/140 minicomputer. The students and library staff have access to the system through 25 Zentec Corp. Model 35 terminals.

Jax reported that the on-line catalog helps students in their research. "The computer allows you to use whichever search term you want and to get more information faster. By typing in a word or name, you get a printout showing authors, subjects and where the volumes are in the library. In the past the student would have had to copy everything down by hand."

Another feature that he cited tells the student immediately whether the book is checked out, available, on order or on the reserve list. That, he noted, "eliminates a lot of frustration" as students no longer search the stacks for books that are missing.

Each week the system mails notices to borrowers who have overdue volumes, and it records check ins and checkouts via optical character readers (OCR) "10 times faster than the old method" of shifting keypunched book cards, Jax reported. Those OCRs are used to read the codes on the volumes and on the identification card of the borrower. A due date is automatically recorded, and the transaction is added to the patron's borrowing history.

For Jax, as an administrator, a primary convenience is the system's ability to generate and track new book orders, orders that the library staff mail to publishers. While that order is being filled, the system notifies card catalog users that the book is expected soon.

Accounting system

But it also adds the transaction to an accounting system. "When we want an item we enter the author's name, the title and other relevant information. The system then kicks out an order form, but also establishes a departmental code and an account number so we can tell in a cumulative sense how much any department or faculty member has ordered in a given time. It helps us to apportion funds according to the proportion of majors on campus. That way you don't have some minor department spending two thirds of your budget," Jax reported.

The previous systems, installed beginning in 1966, were IBM, most recently a Series 4300, using keypunch and collator. Those systems, and a microfiche catalog added in 1973, offered no on-line capabilities, Jax said.

In its first year in the new $6.7 million building, the library recorded 450,000 users. For the months of February, March and April of 1983, attendance figures jumped by 28%, 25% and 33% over the same time periods for 1982. For the year 1983, usage was up 10%. Jax said that enrollment remained the same for those two years.

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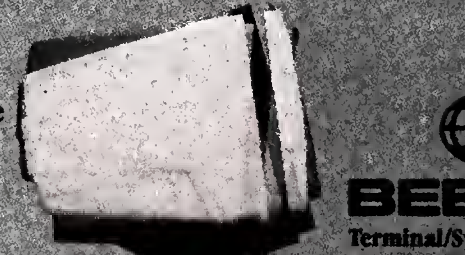

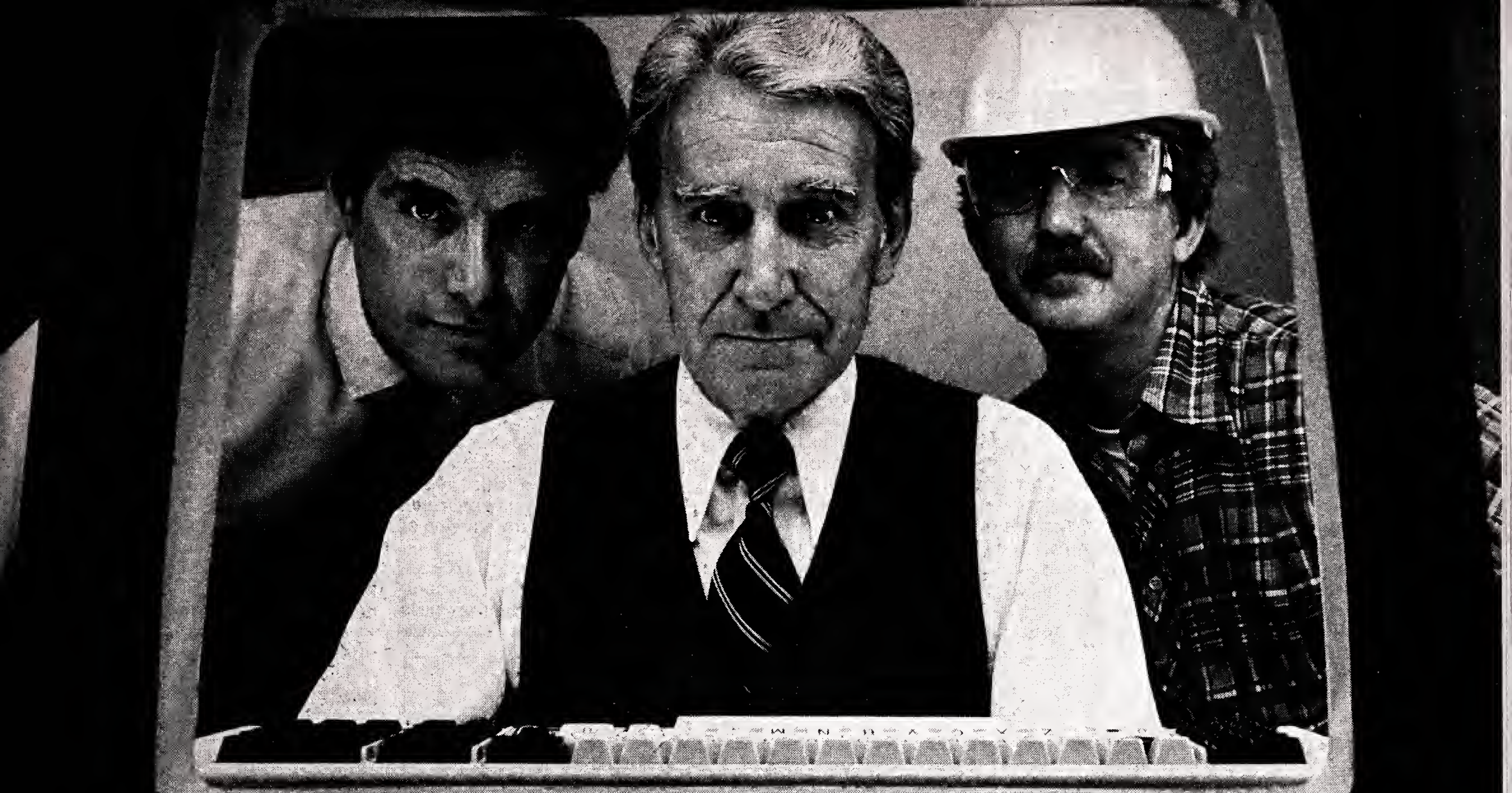

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Firm handles decentralization with EMS

NEW YORK — Decentralized administration gave the Metropolitan Life Insurance Co. a chance to provide better policyholder service, support of the field force and a broader labor base when it shifted home office functions into nine regional head offices during the 1970s.

But despite decentralization, most insurance application paper files remained at the home office here, and the company needed a communications system to transmit both the regional offices' requests for data and the data itself.

To deal with that communications problem, Metropolitan implemented an electronic mail system known as the Administrative Electronic Message System (Adems). The basis of Adems is On-Line Software International's Omnicom package.

From a pilot project involving two head offices and the home office, Metropolitan's use of Adems has grown to include eight departments spread out over 12 locations. Adems is expected to be a key element in the Metropolitan communications network when the company places 1000 Honeywell, Inc. Level 6 minicomputers in sales offices throughout the U.S.

"We think Adems can grow exponentially in the near future as we move into our Sonic [Sales Office Network of Intelligent Computers], which is scheduled to be completed by the end of 1984," according to Michael Reilly, manager of corporate office automation.

Reilly said that a search for an electronic mail system began in 1979 and will be enhanced this month when Metropolitan implements Omni-Link, On-Line's third version of Omnicom.

The insurance company had been using Telex for interoffice communications and started the pilot program in two head offices with Telex backup, Reilly added.

"The Telex operation had many shortcomings. Its work flow was labor-intensive and time consuming. It had a high error rate because of all the people-handling that was involved in the processing of requests and transmission problems," according to Elisabeth Gabrynowicz of Metropolitan's corporate communications office.

For example, clerks in the head office prepared information forms and forwarded them to a Telex clerk, who would batch process the work and prepare a paper tape to run at a scheduled time for transmission to a support unit.

The support unit would then collate the messages, date stamp them and complete file requisition forms, which would be sent to the file division for further collating and stamping before a file clerk would search the files for the requested information, fill in the answers on the information request form and relay the form back to the Telex operator for transmission back to the head office clerk.

"With Adems, a major change was made in operational work flow for the policy requests. Since there were terminals near the correspondents and clerks, they could now key their own requests for policy information and those requests would be sent directly to a printer terminal in the head office," Gabrynowicz said. She reports that requests were received directly by the filing unit and could be answered directly.

Rise in Interest

"As the efficiency and the ease of the system became more and more apparent, the other head offices started to express interest in using it," she added.

Gabrynowicz reported that since full implementation, Metropolitan has had a smoother work flow for information requests and responses, eliminated 17 handling steps for each request, saved $90,000 in Telex costs and eliminated numerous forms.

Adems, which operates on Metropolitan's IBM 3081 MVS with CICS, has saved the company $150,000 in the transmission of policy data such as medical histories and policy status updates, according to Gabrynowicz.

She declined to say what the system cost Metropolitan, but mentioned that the list price is $52,000 for a single CPU license. The company has expanded the system to include other departments, Gabrynowicz said.

"Adems has saved Metropolitan money and has improved the time service for handling our policyholders' insurance activities," Gabrynowicz concluded.

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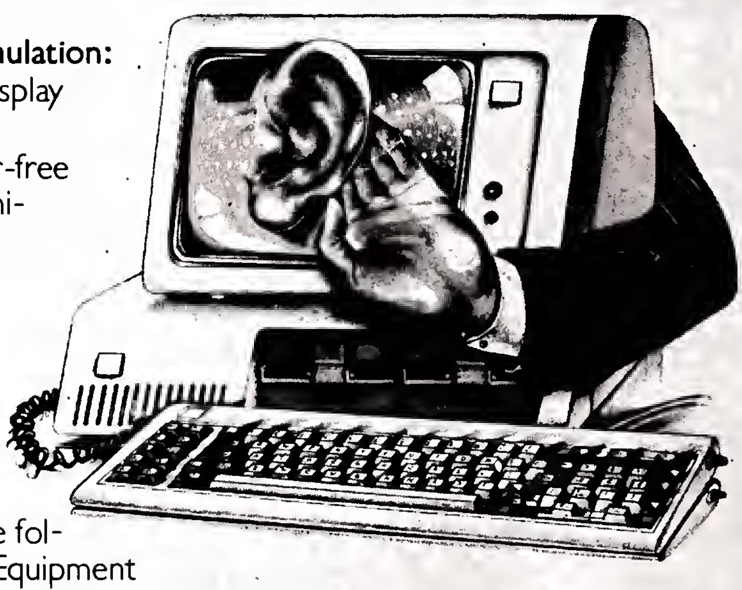

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SYSTEMS & PERIPHERALS

Amdahl power aid out

SUNNYVALE, Calif. — Repeating a marketing concept it used nearly a decade ago, Amdahl Corp. recently announced a performance accelerator for its 5840 and 5850 mainframes. The processors are compatible with IBM's 3083 series of processors.

Called the 580/Accelerator, the unit allows operators to increase processor performance manually during periods of increased demand. This allows users to handle extraordinary work loads without upgrading to a larger processor, the vendor said.

Depending on the installed processor and desired performance level, users can select one of three options:

- Option 1 allows a 5840 user to increase performance to a 5850 level (a performance increase of 25% to 30%).
- Option 2 increases the performance of a 5850 processor to the level of a 5860 mainframe (a performance increase of 30% to 35%).
- Option 3 increases the performance of a 5840 processor to that of a 5860 (a performance increase of 60% to 70%).

In each case, the acceleration occurs when a console operator issues a single command. A second command restores the processor to its original performance level, the vendor said.

The accelerator will be available in the first quarter of 1984 and costs $2,500 when installed in the factory or $3,000 when installed in the field. Operating charges are $200/hour for Option 1, $275/hour for Option 2 and $475/hour for Option 3, Amdahl said.

The accelerator is virtually identical to a marketing technique Amdahl used in the late 1970s on its 470 line of mainframes, noted Jack Hart, an analyst with International Data Corp. (IDC), a Framingham, Mass., market research firm.

"I think it's a very clever idea," Hart said, noting that the accelerator options could give Amdahl the upper hand when a user is considering bids from IBM and Amdahl.

"If I were an owner of a bigger [Amdahl] model, I'd be upset," Hart said, noting that larger users are not given the option of slowing their processors down when they do not need full power, thereby paying less.

Amdahl, 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

Stratus offers supermini peripherals

Stratus Computer, Inc. has announced an integrated disk subsystem, a tape drive and price reductions on disk drives for the firm's Stratus/32 line of 32-bit superminicomputers.

The integrated disk storage subsystem, called the Mass Storage Subsystem, consists of 448M bytes of Winchester disk drives. The unit also includes intelligent directors and microprocessor-based controllers. The vendor said the unit can increase raw data throughput by 45%. The unit can reportedly boost total system performance by 25%.

Up to six mass storage controllers can be connected to a single Stratus/32 processing module. Each controller can support up to eight storage directors, each of which operates a mass storage disk drive. This, the vendor said, allows a single CPU to address up to 48 disk drives with more than 21G bytes of on-line storage.

The mass storage controller handles all disk I/O operations in a reportedly fault-tolerant environment.

The mass storage director controls the access to data on a disk drive, buffered data blocks being transferred to and from the disk, and monitors status information, the vendor said.

The mass storage controller costs $9,000, the mass storage director costs $5,000, and the mass storage disk drive costs $25,000, the vendor said.

The firm also announced a rack-mount-

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XT, Datamaster: which is better?

HARD TALK

TOM HENKEL

IBM, which historically has baffled users with overlapping product lines, appears to have added two more systems to the list.

Both the popular Personal Computer XT and the older System/23 Datamaster cost about $10,000, are based on Intel Corp. microprocessors and are geared toward the same base of small business users. In fact, the two systems are sold side by side in IBM Product Centers.

The Personal Computer XT has been one of IBM's most successful products. Over the past six months, microcomputer dealers have been unable to keep the processors in stock, and IBM has admitted it cannot manufacture the processors fast enough to fill demand. While industry watchers do not call the Datamaster a failure, they are quick to point out that the system never experienced the overwhelming success of the Personal Computer XT — even though it was on the market long before the current boom in microcomputing.

Which system is better? Industry watchers like John Hemphill, vice-president of PC Technology for Richardson, Texas-based Future Computing, Inc., said it is not so much a question of superiority but of which system best suits the user's needs. Hemphill, however, noted that technological timeliness appears to play a key role in the user's decision. One dealer in used computers, for example, noted the Datamaster is not a hot seller.

The Datamaster was announced on July 28, 1981, two weeks before the IBM Personal Computer. It was billed as an entry-level addition to IBM's line of small business computers and sported an 8-bit Intel 8085 microprocessor plus a main memory capacity ranging from 64K bytes to 128K bytes. The unit can per-

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Caltech microprocessors may rival supercomputers

By Tom Henkel
CW Staff

PASADENA, Calif. — When linked together in sufficient quantities, microprocessors can rival the performance of the fastest processors in the world.

That is the theory that a group of researchers at the California Institute of Technology (Caltech) here are working to turn into reality. The result of their work, dubbed the Cosmic Cube, is a scientific processor made up of Intel Corp. 8086 microprocessors and Intel 8087 floating-point processors.

Currently, Caltech has developed three computer systems employing microprocessor-controlled nodes. The largest, a 64-node processor, reportedly offers approximately one-tenth the power of a supercomputer like the Cray Research, Inc. Cray-1. According to one of the Caltech project's lead researchers, Charles L. Seitz, an associate professor of computer science, the unit costs about $80,000, compared with the Cray-1's $7 million-plus price tag.

The two other processors, one with four nodes and one with eight nodes, are used for software development.

Emphasizing that it still is an experimental architecture, Seitz's co-researcher, Geoffrey Fox, a professor of theoretical physics and dean of educational computing at Caltech, said the Cosmic Cube offers potentially 1,000 times the performance of currently available supercomputers.

The advantage of the Cosmic Cube design, Seitz said, is that a virtually unlimited number of nodes can be linked to tackle a large program. Both Seitz and Fox explained that programs particularly suited for processing on supercomputers are not so much complex as they are extremely large.

Seitz pointed, for example, to a weather forecasting program that evaluates the atmosphere in every square mile on the Earth's surface and requires dealing with an enormous amount of information. The calculations necessary to evaluate the atmosphere within each square mile block, however, are not extremely complex.

Supercomputers operate by identifying similar operations (such as additions, subtractions and divisions) and performing them concurrently. However, current supercomputer architectures suffer from limits on how many concurrent operations can be performed at one time.

The Cosmic Cube architecture, Seitz explained, can be expanded with a virtually unlimited number of nodes that would, in effect, solve the concurrency limitations.

But one problem is that the Cosmic Cube's architecture does not lend itself to processing the same algorithms used on conventional supercomputers such as the Cray-1 or Control Data Corp.'s Cyber 205. While the Cosmic Cube is capable of executing the Fortran-based applications developed for supercomputers, many of those applications may have to be rewritten to take advantage of the concurrency offered by the Cosmic Cube.

Both Seitz and Fox estimated it could take 10 to 20 years before processors like the Cosmic Cube take the place of currently used supercomputers.

But Seitz believes a commercial product using the Cosmic Cube architecture may be available in about five years.

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form both DP and word processing functions, drawing from a list of IBM-developed program products, according to an IBM spokesman.

The Datamaster can accommodate a 30.8M-byte hard disk drive and uses an embedded operating system that the user cannot change or alter. Black-and-white graphics capabilities are also available on the Datamaster, IBM said.

Strongest points

Perhaps the Datamaster's strongest points are its ability to use a Basic compiler, which is compatible with the Basic used on the larger IBM System/34, and its ability to connect up to four dumb terminals, making it a multiuser system.

The Personal Computer XT appears to do the Datamaster one better in almost every category.

The XT is based on a newer Intel microprocessor, the 16-bit 8086. The unit can make use of an enormous software base, namely the host of programs designed to operate under Digital Research, Inc.'s CP/M, Microsoft, Inc.'s MS-DOS or IBM's version of MS-DOS, the PC-DOS operating system. Users also have the option of switching operating systems.

The XT offers a maximum of 640K bytes of main memory, but can only use 10M bytes (20M bytes with an expansion feature) of hard disk storage when purchased from IBM. However, Hemphill noted that vendors of XT-compatible products offer hard disk drives with up to 80M bytes of storage.

The XT also tends to be a stand-alone system. Hemphill noted that multiple terminals cannot be attached to an XT processor that uses the basic MS-DOS operating system. The Future Computing analyst was also quick to point out that several XT-compatible vendors, such as North Star Computers, Inc., have skirted the multiuser question by linking XT users via a local-area network.

Overshadowed by micro boom?

One Datamaster user, Daniel Grabenstein, a business consultant in Harrisburg, Pa., said the processor may have been overshadowed by the boom in microcomputers.

Grabenstein, who uses the system to perform contract general business services, noted that while his system has worked well for the past two years and he is generally happy with it, the Datamaster lacks the ability to use popular microcomputer operating systems. Noting the popularity of such operating systems as Digital Research's CP/M, Grabenstein said he could expand his business if he could use the Datamaster to write microcomputer programs.

Hemphill noted that the advantage of either the System/23 or Personal Computer XT is in the eyes of the beholder. The Datamaster is typically sold as a turnkey system from IBM. The XT, while offering the capability to use many vendors' software packages, requires some shopping.

"Lots of customers do not use the latest and greatest hardware," Hemphill said.

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able streaming tape drive. The front-loading unit reads and writes a standard ½-in., reel-mounted tape. In a streaming mode, the unit operates at 100 in./sec at 1,600 bit/in. The unit can also operate at 50 in./sec at 3,200 bit/in. In a start/stop mode, the drive operates at 25 in./sec.

The tape drive can be used either as a backup for data stored on disks or as a data storage unit for tape data processing applications. The unit costs $10,000, the vendor said.

Lastly, Stratus cut the price of its 143M-byte Winchester disk drives by 22%. The units were reduced from $16,000 to $12,500.

Stratus, 6 Strathmore Road, Natick, Mass. 01760.

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about five years.

Currently, the nodal processors consist of board-level units comprised of a total of 78 chips, including the 8086 and 8087 microprocessors and 136K bytes of random-access memory. "Physically, the machine occupies about 6 cubic feet, making it fit on the average desk, and uses 700W of power," Seitz noted.

The Cosmic Cube processors use the C programming language. Digital Equipment Corp. VAX-11 superminicomputers work as front-end processors.

The researchers are working on a second project aimed at reducing the 78-chip nodal processor to a one- or two-chip device called a Mosaic, which, Seitz said, can be as small as a micron. The scientists hope the Mosaic will be able to do everything the nodal processor can do.

While Caltech is not alone in investigating supercomputer theories based on parallel processing, Fox contended that the university is one of only a few working with an actual prototype. The Cosmic Cube research is being carried out with funding from the Defense Advanced Research Projects Agency and the U.S. Department of Energy, two organizations that have vowed to fund experimental artificial intelligence projects.

However, according to Seitz and Fox, the artificial intelligence applications of the Cosmic Cube are somewhat questionable. If Caltech is successful in developing the single-chip Mosaic, Seitz noted, such a device could be integrated into a symbolic processor to speed up voice or image processing.

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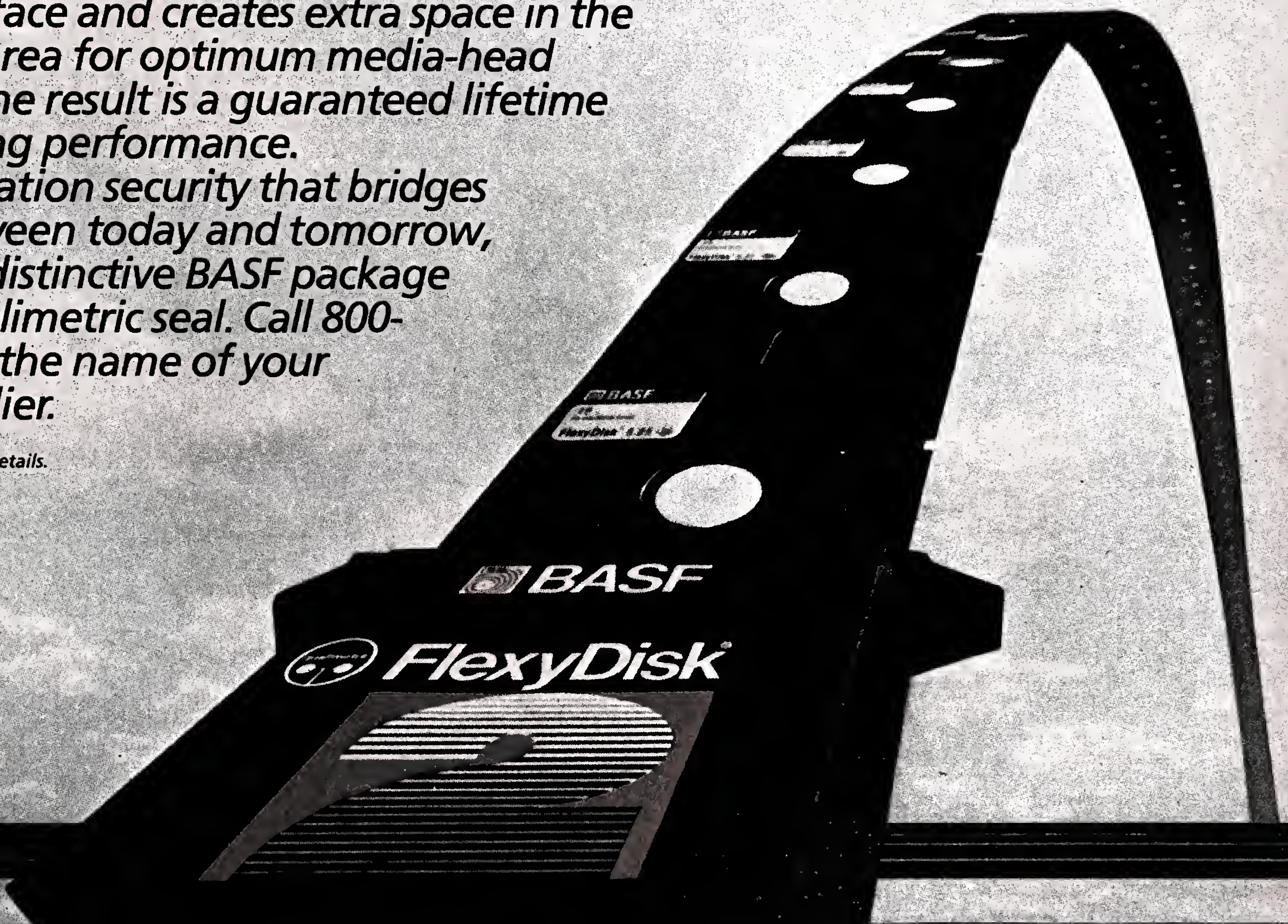

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DATA STORAGE

MAXELL CORP. OF AMERICA
DC 301

The Computer Products Division of Maxell Corp. of America has announced an optical disk drive.

The glass-based, 12-in. disk — Model No. DC 310 — can store 1.5G bytes of information or 46,000 pages of information when both sides are used, the vendor said. With a track density of 16,000 track/in. and a recording density of 19,500 bit/sec, recording is performed by the sector system allowing for random access.

The product is a joint development of Hitachi Ltd. and Hitachi Maxell and achieves a minimal bit error rate, the vendor said. The disk, in addition, can be linked into Hitachi's Hitfile 60, an optical disk storage system designed for document filing and mainframe linkup, according to the vendor.

The optical disk sells for $200. A two-sided disk costs approximately $300.

Maxell Corp. of America, 60 Oxford Drive, Moonachie, N.J. 07074.

AVIV CORP.
TFC 825; TFC 925

Aviv Corp. has announced a series of magnetic tape controllers designed for compatibility with Digital Equipment Corp. TS11 controllers.

The TFC 825 and TFC 925, each available in three versions, are offered for use with DEC LSI-11, PDP-11 and VAX series processors using 800, 1,600, 3,200 and 6,250 bit/in. drives.

Of the three versions available, one is for use with Pertec Computer Corp.-type streaming and formatted start/stop drives, another for low-speed (50 in./sec) Storage Technology Corp.-compatible group coding recording start/stop drives and the third for high-performance (125 in./sec) Storage Technology-compatible group code recording start/stop drives, according to the company.

The TFC 825 reportedly is a DEC Unibus-compatible, single hex-size board. The device is transparent to DEC and Bell Laboratories versions of Unix.

The TFC 925 is said to be compatible with the DEC Q-bus and a single quad card controller. It reportedly has the same features as the TFC 825, as well as 22-bit addressing and block mode direct memory access transfer.

The products are available for $2,950 each.

Aviv Corp., 26 Cummings Park, Woburn, Mass. 01801.

PROCESSORS

CAMBRIDGE DIGITAL SYSTEMS, INC.
System 58

Cambridge Digital Systems, Inc.'s System 58 line of desktop Digital Equipment Corp. Q-bus-compatible minicomputers is available in higher performance configurations that are said to incorporate larger capacity Winchester disk drives and a variety of removable media mass storage devices.

System 58 is integrated with DEC's PDP-11 family. Processor options for the System 58 include the DEC LSI-11/73, LSI-11/23 Plus, LSI-11/23 and Cambridge Digital's own Motorola, Inc. 68000/68010-based Univac CPU.

Greater mass storage capacities are now available with the 10.4M-, 20.8M- or 41.6M-byte Winchester drives.

The mass storage subsystems reportedly emulate DEC'S RL01 and RL02 drives on an RLV22 controller. Optional backup devices for the System 58 include removable cartridge disks or floppy diskettes.

The System 58 is priced from $8,000.

Cambridge Digital Systems, P.O. Box 568, 65 Bent St., Cambridge, Mass. 02139.

TERMINALS

SCREEN DATA CORP.
Power Screen

Screen Data Corp. has introduced a dynamic microfilter, the Power Screen, said to eliminate the static electric field which surrounds the face of a video display terminal.

The static electric field reportedly can cause skin discomforts and can also be a source of microcircuitry failure.

The vendor said computers can generate a static charge of up to 50,000V, creating a positive-ion electric field.

The Power Screen eliminates static electricity and blocks out reflective light with identical features found in the vendor's standard antiglare screen.

The antiglare screen's nylon microfilter attaches to the face of the computer terminal, and 100 different models in various sizes fit most of the available 400 CRT terminal makes and models, according to a spokesman for the vendor.

The Power Screen costs $49.50, and the antiglare screen costs $39.50.

Screen Data, 240 Cedar Knolls Road, Cedar Knolls, N.J. 07927.

PINETREE COMPUTER SYSTEMS, INC.
DP 2502 portable terminal

Pinetree Computer Systems, Inc. recently announced the DP 2502 hand-held data capture, data entry computer terminal to be used in con-

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	VISUAL 1050	IBM™ PC	Apple™ IIe	TRS-80™ Model 12	DEC Rainbow™
Base System Price[1]	$2,695	$2,750	$2,390	$3,999	$3,495
Serial Port (RS232)	STANDARD	$119	$195	2 STANDARD	2 STANDARD
Parallel Port	2 STANDARD	$119	$180	2 STANDARD	STANDARD
Bit-Mapped Graphics	STANDARD	$240	STANDARD	$499	$845
Word Processing Software	STANDARD	$200-$500	$200-$500	$399	$200-$500
Spreadsheet Software	STANDARD	$200-$300	$200-$300	$299	$200-$300
Business Graphics Software	STANDARD	$200-$400	$200-$400	$200	$200-$400
Communications Software	STANDARD	$100-$200	$100-$200	$100	STANDARD
COMPLETE SOLUTION PRICE	$2,695	$3,928-$4,628	$3,465-$4,165	$5,496	$4,940-$5,540
Dual Drive Capacity	800 KB	640 KB	280 KB	2.5 MB	800 KB
Graphics Resolution	640 x 300	640 x 200	280 x 192	640 x 240	800 x 240
Keys on Keyboard	93	83	63	82	105
Expandable Memory	YES	YES	YES	YES	YES
Optional Winchester	YES	YES	YES	YES	YES
Tilt and Swivel Display	YES	NO	NO	NO	ND

1—Includes CPU, 64K User Memory, Keyboard, Display, Two Disc Drives, and Operating System
* Based on manufacturers' information available August, 1983. VISUAL 1050 includes 128K User Memory standard.

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junction with two data receivers, the DPR 1002 standalone receiver and the DPR 1012 15-in. circuit board that resides in an IBM Personal Computer.

The DP 2502 reportedly provides fully integrated, two-way communications, transmitting captured data over standard telephone lines at 1,200 bit/sec to either model data receiver. The receiver accepts the data, reformats it as required by the host computer and delivers the data to the host at 9,600 bit/sec.

The hand-held terminals are priced at $895, the DPR 1002 is $2,350 and the DPR 1012 is $1,750.

Pinetree Computer Systems, Suite 2000, 8600 Freeport Pkwy., P.O. Box 610883, Dallas, Texas 75261.

FUJITSU SYSTEMS, INC.
Fujitsu 7990

Fujitsu Systems, Inc. has introduced a point-of-sale master terminal that reportedly can support up to 10 Fujitsu 7880 slave terminals.

The Fujitsu 7990 features plasma display, 256K bytes of random-access memory (RAM), 384K bytes of bubble memory, a 128K-byte removable bubble memory cartridge and an RS-232 interface. Options include an internal modem and up to 1M byte of bubble memory.

According to the vendor, the product is geared toward stores with 10 terminals or less that handle a large number of transactions each day. The plasma display is said to improve data entry and reduce training time.

The terminal will be available in September for $7,695.

Fujitsu Systems of America, No. 620, 9841 Airport Blvd., Los Angeles, Calif. 90045.

PRINTERS/ PLOTTERS

INNOVATIVE ELECTRONICS, INC.
Innovator 202-FC

Innovative Electronics, Inc. has announced extended communications capabilities for its Innovator 300 line/min printer subsystem.

The Innovator 202-FC is said to provide emulation of IBM 2780 and 3780 terminals.

It reportedly supports space compression and expansion, processor interrupt reception, conversational mode, reception of Ebcdic transparent data, component selection, vertical format control and horizontal format control.

The system is controlled by a micro-based, single-board computer system. The programmable controller is used to implement complex communications protocols.

It also is said to feature a comprehensive set of diagnostics, designed to allow the user to verify proper operation of the printer system.

The printer uses heavy-duty chain technology and has a nominally rated print speed of 300 line/min and 400 line/min with use of a 48-char. set.

It is available in 132-col. and 80-col. models.

The 132-col. printer is priced at $5,495.

Innovative Electronics, 4714 N.W. 165th St., Miami, Fla. 33014.

MICRO PRODUCTS CO. DIVISION OF C3, INC.
MPC 2150

The Micro Products Co. Division of C3, Inc. has announced a bit-mapped, eight-color graphics terminal, designed to emulate the Intelligent Systems Corp. Intecolor 8301R terminal.

The MPC 2150 reportedly features a 48-line by 80-col. display which may be overlayed by a pixel-addressable graphics display yielding a resolution of 480 pixels by 384 pixels.

It also is said to offer 16 shiftable and 32 programmable function keys on an extended keyboard as a standard feature.

Other features reportedly include English-language set-up menus stored in nonvolatile random-access memory and multiple pages of video memory to allow local and on-line editing of graphics designs and text.

Shipments are scheduled to begin in the third week of February.

The MPC 2150 is priced at $3,995 in single-unit quantities.

C3, 11425 Isaac Newton Sq. S., Reston, Va. 22090.

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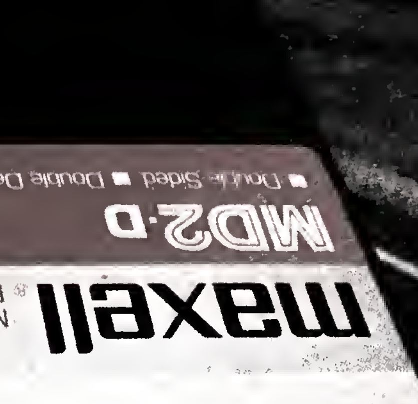

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PRINT

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VECTOR GENERAL, INC.
VG 8250 enhancements

Vector General, Inc. has announced enhancements for its VG 8250 computer-aided design and manufacturing (CAD/CAM) graphics display system which the vendor said will increase the system's cost effectiveness.

The enhancements are reportedly a mini version of the VG 8250's channel control unit, which can support four sites, and a mini version of the firm's remote display controller, capable of supporting four stations. The enhancements take the form of monochrome stroke monitors. Ergonomic improvements include a ratio CRT and a low-profile function switch box.

The firm also added firmware to enhance CAD/CAM display processing functions contained in the mini remote display controller. Vector General's Color Stroke Shadow Mask Display Station is an option to the controller.

The VG 8250 is a plug-compatible replacement for the older IBM 3250 display system; it is used with IBM and IBM-compatible computers. The channel data control unit, the remote data control unit and four display station monitors cost $93,500.

Vector General, 21300 Oxnard St., Woodland Hills, Calif. 91367.

EVANS & SUTHERLAND COMPUTER CORP.
PS 330 price reductions

Evans & Sutherland Computer Corp. has announced price reductions of approximately 40% for its PS 330 graphics systems.

Company officials said improvements in the underlying integrated circuit technology have decreased the cost differences between high-performance and low-performance systems.

The price for the PS 330, consisting of a control unit with 1M byte of memory, a 19-in. color calligraphics display, a keyboard with 12 function buttons and a data tablet, has been reduced from $84,995 to $48,000.

The price for the system with a black-and-white monochrome display has been reduced from $69,000 to $40,200.

The new prices are now in effect.

Evans & Sutherland, 580 Arapeen Drive, Salt Lake City, Utah 84108.

BOARD-LEVEL DEVICES

1ST SOLUTIONS; CYBERSYS, INC.
4M-byte memory board

1st Solutions and Cybersys, Inc. have jointly announced a 4M-byte memory board for Prime Computer, Inc. systems.

The product occupies a single standard board slot and provides 4M bytes of error-correcting memory for Prime Models 150 through 850 and the 2250.

According to the vendors, the board may be interleaved with another 4M-byte board or up to four 1M-byte boards.

Orders are being accepted, with delivery within 30 days. The price is approximately $20,000.

1st Solutions has also announced an upgrade plan whereby existing Cybersys P1024 memory boards can be upgraded to 4M-byte capacity, with a 30-day lead time.

1st Solutions, Suite 107, 2001 E. Campbell, Phoenix, Ariz. 85016.

MOTOROLA SEMICONDUCTOR PRODUCTS, INC.
VM03 single-board microcomputer

Motorola Semiconductor Products, Inc. has introduced a single-board microcomputer said to add virtual memory plus hardware memory management features to its Versamodule family of micro system components.

Model VM03 reportedly incorporates a Motorola, Inc. 68010 virtual memory micro processing unit operating at 10 MHz, plus a 68451 Memory Management Unit to afford relocation and protection of user tasks.

Features include a Versabus Interrupt Handler and Interrupter and I/O channel interface.

Model VM03 costs $3,900 for quantities of one to five.

Motorola Semiconductor Products, P.O. Box 20912, Phoenix, Ariz. 85036.

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MICROCOMPUTERS

Betamax decision won't hurt users

MICRO BITS

TOM HENKEL

What implications does the U.S. Supreme Court's ruling in the Sony Corp. Betamax case hold for microcomputer users? In a matter of speaking, the jury is still out; but experts tend to agree the impact on microcomputer users, especially corporate users, will be minimal.

The Supreme Court ruled that it is permissible to copy, for private use, television programs that can be received free over the airwaves.

While few microcomputer programs can be found floating around in the atmosphere, some of the underlying issues in the case may affect the micro sect.

For example, New York attorney Herbert Swartz noted that for the first time, the court has ruled it is permissible to make complete copies of a copyrighted document — in this case, a television program.

Permissible to copy?

Does that mean it is also permissible to make single complete copies of software programs? Maybe, Swartz said, if the person doing the copying is clever. Can you make wholesale copies of Visicorp's Visicalc for 500 corporate executives? No, that is still illegal. And don't hold your breath waiting for the situation to change.

"I don't think anyone can conclude [the Supreme Court's decision] is an open invitation to record software in a commercial setting," noted Washington, D.C., attorney Jon Baumgarten, a partner in the firm of Paskus, Gordon and Hymen.

Baumgarten said the Betamax decision will actually make it harder for corporations to copy software blatantly, because in ruling that copies of copyrighted material can only be made for private, home use, the court has more clearly stated that copying software for commercial use is wrong.

Clearest message

What may be the clearest message from the Supreme Court ruling probably means little to micro users. In making its decision, the court ruled that manufacturers of recording equipment, such as video cassette recorders, cannot be held liable for the legal abuses of their customers.

But in the computer industry, that is a moot point. In 1980, the U.S. Congress ruled that it is permissible for computer users to make backup, or archival, copies of software and data. And equipment to make such copies can legally be bought and sold.

What the Supreme Court's decision has failed to address is the practicality of enforcing copyright laws. The corporation that makes multiple copies of microcomputer software for internal distribution is most likely breaking the law. But catching up with the offenders is another story.

Tom Hemnes, a partner in the Boston firm of Foley, Hoag and Eliot, noted "in large-scale copying, one tends to find out about it." Using the example of a corpo-

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Portable mart to tighten

Vendor opportunity remains

By Eric Bender
Special to CW

Times are good for the companies tagging along behind IBM's Personal Computer with Personal Computer-compatible portable micros. This corner of the personal computer market features some of the industry's greatest success stories.

But this happy condition won't last indefinitely for portable computers, according to industry analysts, who warn of much rougher competition just over the horizon. International Resource Development, Inc. in Norwalk, Conn., predicts "kamikaze" price wars. "A year from now, it'll be a very difficult market," said Aaron Goldberg of International Data Corp. in Framingham, Mass. "The easy windows are going to close."

These predictions sound very much like those for the overall industry, and the reason is straightforward: For the most part, this is not a niche market.

Two long-term developments are blurring the edges of the market. First, most manufacturers of portable micros increasingly emphasize other features (price and software availability) over portability. Ask them about their competition, and they usually mention desktop computers. And second, many suppliers of 8-bit portables have undertaken the long trek toward Personal Computer compatibility.

A large portion of this big market also wants, or thinks it needs, an IBM-compatible machine. Like many other dealers, Bob Wolff of Wolff Computers in New York said there's "tremendous hype" for Personal Computer compatibility, but he added that "we want to be in on the hype."

And, of course, the sales. Future Computing, Inc. of Richardson, Texas, predicts that about 800,000 Personal Computers and Personal Computer-compatibles will be sold this year in the U.S., 90,000 of them portables for business use. Next year, the total will rise to more than 1,620,000 systems, including 180,000 portables.

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'Espionage-proof' portable debuts

MOUNTAIN VIEW, Calif. — Grid Systems Corp. recently announced what it calls "the first espionage-proof portable computer," featuring twice the random-access memory (RAM) of previous Grid models.

The company also announced a 256K-byte RAM entry-level micro, a 512K-byte micro with built-in modem and a 17% price reduction of the model formerly known as Compass.

The Model 1107 microcomputer provides 512K bytes of RAM, along with 384K bytes of nonvolatile bubble memory. Encased in magnesium to resist detection and decoding of radio signals that may be emitted by unshielded computers, the product weighs 13½ lb, will fit in a space the size of half a standard-size briefcase, houses a full-size, flat-panel screen and uses Intel Corp. 8086 and 8087 microprocessors, according to a spokesman.

The entry-level product, Model 1100, also reportedly features Intel 8086 and 8087 microprocessors and flat-panel screen, weighs 10 lb and features 256K bytes of RAM and 384K bytes of bubble memory.

The Model 1109 features a 300/1,200 bit/sec modem and 512K bytes of RAM using 256K-bit chips developed by Hitachi Ltd.

The Compass, now renamed the Model 1101, offers the same features as the Model 1100, along with the 300/1,200 bit/sec modem, according to the vendor spokesman.

Prices for the product line are: Model 1107, $12,495; Model 1100, $5,995; Model 1101, $6,795; and Model 1109, $7,995, the vendor spokesman said.

Grid Systems, 2535 Garcia Ave., Mountain View, Calif. 94043.

STM introduces transportable micro

MENLO PARK, Calif. — STM Electronics has announced a 17-lb, IBM Personal Computer-compatible transportable computer said to feature an integrated 16-line LCD, 40-col. thermal printer, modem and data communications abilities, built-in speaker phone, software and execution time almost as fast as the IBM Personal Computer.

The STM Personal Computer comes standard with a 16-line by 84-char. LCD with 540- by 200-pixel resolution for graphics.

An expanded display capability for standard video monitors supports "windowing" software and allows the user to choose between a 25-line by 80-col. and a 132-col. display with 640 by 400 pixels for high-resolution graphics.

The unit features 256K bytes of random-access memory, expandable to 512K bytes, and has dual 1M-byte floppy disk drives. These double-sided, double-density drives give the user a total of 1.6M bytes of formatted storage and roughly 1,200 pages of text and eliminate the need for add-on disk drives.

This feature gives the STM Personal Computer the largest standard floppy disk storage capacity of any transportable computer, the vendor claimed.

The product is driven by Intel Corp.'s 80186 microprocessor, which is compatible with both the IBM Personal Computer and Microsoft, Inc.'s MS-DOS 2.0.

An automatic dial and answer direct connect modem for data communications is also offered. Programmable between 300 and 1,200 bit/sec, the modem supports electronic mail, telex and networking with other STM Personal Computers and provides access to some information systems, the vendor said.

Prices for the STM Personal Computer will begin at $3,000. A desktop version will be priced starting at $2,500.

STM Electronics, Suite 250, 530 Middlefield Road, Menlo Park, Calif. 94025.

Bubble memory for mass storage on VME-Bus systems/**75**

Communications package links Zenith Z-100 with DEC CRTs/**77**

Cobol, Fortran compilers for Apple's Lisa/**78**

INSIDE

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Strictly speaking, nothing in this world is fully IBM-compatible, except the Kit 1 from Colby Computer in Palo Alto, Calif., which allows users to repackage their Personal Computers in a portable unit. Compatibility depends on the system's ability to mock exactly IBM's copyrighted read-only memory instructions and the individual software package's use of direct hardware calls (which bypass the operating system). In short, it's a black art.

Meanwhile, there's a host of other contenders, both established entries and start-ups, each with its own strategy, despite a wide perception that the window is closing. Because start-up costs are high, critical components are in short supply, and retail shelves are jammed.

Strategic Technologies, Inc. of Norcross, Ga., plans to sell a "PC Traveler" model, which features a plasma screen display, dual Intel Corp. 80186 chips, a built-in printer and 6M bytes of hard disk cartridge storage. The company plans to build at least 13,000 systems in 1984. Ivy Microcomputer Corp. in Wilmington, Mass., plans to augment dealer sales for its new Personal Computer-compatible portable with distribution through department stores.

At the same time, just about everyone else in the marketplace from Apple Computer, Inc. to Victor Technologies, Inc. is expected to introduce a portable personal computer. To complicate matters further, several other interesting lightweight, 16-bit machines now available are not positioned as IBM-compatible portables but may indicate future competition.

These are the Mobile Office from Gavilan Computer Corp. in Campbell, Calif.; the Model 1101 (formerly Compass) from Grid Systems Corp. of Mountain View, Calif.; and the PC-5000 from Sharp Electronics Corp. in Paramus, N.J.

These machines have base prices ranging between $2,000 and $9,000 and very different configurations. They are aimed at very different customers, but they all weigh less than 15 pounds and run Microsoft, Inc.'s MS-DOS.

Some in the industry expect notebook-size computers like the PC-5000, which has an 8-line, 80-char. LCD screen, to compete in a broader market when the displays are full size. Sharp Marketing Manager Lou Ferri said that Sharp could provide a 24-line screen now, but will wait until that seems cost-justified. For many applications, the current display "is not a problem," Ferri maintained. "You're looking at one-third of a standard 24-line screen, and we feel that's adequate."

The one question in the future of portables is IBM. Future Computing thinks IBM plans to introduce a portable business system. The research firm forecasts that Big Blue will ship 40,000 such systems next year, according to analyst William Ablondi, although Future hasn't fleshed out details on what the product will look like.

Many others doubt IBM will bother. "It's ridiculous to think that IBM would introduce a product that would compete with the [Personal Computer], although the Peanut might run some [Personal Computer] software," said Herbert Kummer, marketing director at Seequa Computer Corp. in Annapolis, Md.

Another concern is what happens when IBM's production capability begins to catch up with demand. "To a certain extent, we'll all enjoy IBM's inability to deliver enough," according to Otrona Advanced Systems Corp. President James Lindner. But, like others, he predicts that even if two million Personal Computers roll off IBM's assembly lines next year, an enormous market remains for other manufacturers.

"The market is so big that everyone can play," Kummer said. A Compaq Computer Corp. spokesman noted the IBM shortage, but pointed out that "there's been a shortage of [Compaq Computer] Compaqs too — I don't know to what extent that's benefited IBM." Slightly more seriously, another Compaq spokesman said that if IBM ships two million Personal Computers, the company's position will be enhanced by further acceptance of the Personal Computer de facto standard.

So despite the predictions of hard times down the road, the present looks highly promising. There's room for many contenders, Goldberg said — "if they run their businesses very well."

Eric Bender is an Associate Editor of Micro Marketworld, *a sister publication of* Computerworld, *in which this article originally appeared.*

COPIES

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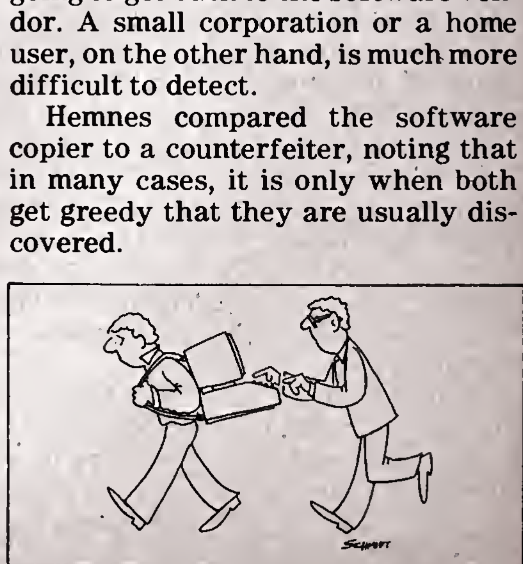
ration making copies of microcomputer software for about 500 micros, there will probably be about 2,000 employees who may suspect the company is illegally copying software.

With that many people in on the corporate secret, word is probably going to get back to the software vendor. A small corporation or a home user, on the other hand, is much more difficult to detect.

Hemnes compared the software copier to a counterfeiter, noting that in many cases, it is only when both get greedy that they are usually discovered.



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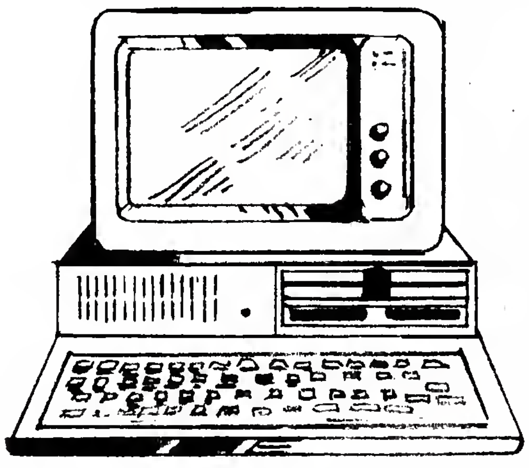

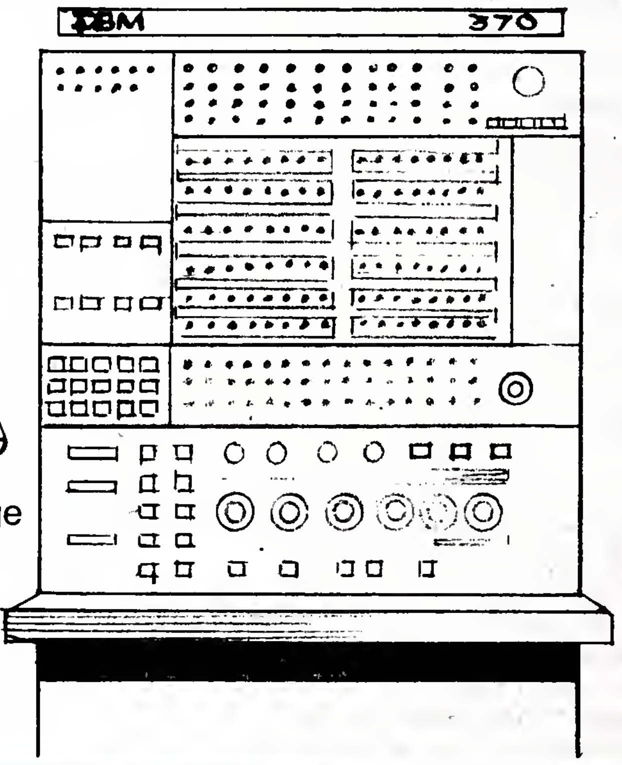

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SYSTEMS

NORTH STAR COMPUTERS, INC.
Horizon 8/16

North Star Computers, Inc. has announced a version of its Horizon 8/16 microcomputer preconfigured for two users which will allow customers to buy the new multiuser, multiprocessor computer with a 5M-byte hard disk.

The Horizon 8/16 system can support up to eight users for less cost than the initial two-user bundles, the vendor said. A 15M-byte Horizon 8/16 for eight users would cost less than $1,300 per user.

In addition, a two-user Horizon 8/16 configuration is available with a 30M-byte hard disk for $7,699. A 15M-byte, two-user configuration sells for $6,699, and the 5M-byte hard disk for two users costs about $2,600 per user, the vendor said.

North Star Computers, 14440 Catalina St., San Leandro, Calif. 94577.

AUTOGRAPHIX, INC.
Autographix 200

Autographix, Inc. has introduced the 200, a computer graphics design system based on the IBM Personal Computer. Presentation-quality graphics can be produced as 35mm slides, view graphs, color prints, black-and-white hard copy or video electronic boardroom visuals.

The system incorporates the IBM XT version of the Personal Computer with 256K bytes of random-access memory standard. Graphics capabilities are enhanced by a graphics display processor, which permits two images to be stored in the memory simultaneously. Two monitors are included with the system, a black-and-white monitor and a red-green-blue monitor.

The price of the Autographix 200 is $35,500, with an additional charge of $750 for installation and training.

Autographix, 100 Fifth Ave., Waltham, Mass. 02154.

SPECTRAVIDEO, INC.
SVI-728; Family Pak Plus; 328 Mark II Pro systems

Spectravideo, Inc. has announced two systems using the Microsoft, Inc. MSX hardware and software configuration.

The SVI-728 reportedly is a Digital Research, Inc. CP/M-based machine featuring a Zilog, Inc. Z80A microprocessor. The system is scheduled for release in April.

The company also is marketing its Family Pak Plus and 328 Mark II Pro systems using the SVI-328, full-stroke, CP/M-based computer. The Family Pak Plus is said to include the SVI-328, offering 32K bytes of read-only memory (ROM) and 80K-byte random-access memory (RAM), expandable to 96K bytes of ROM and 144K bytes of RAM.

The 328 Mark II Pro system reportedly features six expansion slots, two disk drives, an 80-col. card, 12-in. monochrome monitor, and an 80 char./sec dot matrix printer and six software programs.

The SVI-728 is expected to have a suggested retail price of $349; the Family Pak Plus and the 328 Mark II Pro are priced at $599 and $1,695, respectively.

Spectravideo, 39 W. 37th St., New York, N.Y. 10018.

STORAGE

PERCOM DATA CORP.
PHD hard disk drives

Percom Data Corp. has announced a generation of high-performance hard disk drives for a variety of personal computers, including IBM's Personal Computer, that are said to support IBM's PC-DOS 2.0. operating system.

The PHD product line reportedly will provide users with speed enhancements and efficient implementation of cache memory. Caching design permits Percom's hard disk drive to work with the host computer so that the most used files are actually stored and processed in memory.

The caching driver will have a suggested retail value of $149.95. A caching driver software upgrade kit will cost $50.

Percom Data, 11220 Pagemill Road, Dallas, Texas 75243.

BUBBLE-TEC DIVISION OF PC/M, INC.
VMI-1 magnetic bubble mass storage memory system

The Bubble-Tec Division of PC/M, Inc. recently announced a magnetic bubble mass storage memory system providing up to 256K bytes of nonvolatile memory for use with microcomputers utilizing the VME-Bus system architecture.

The VMI-1 reportedly includes one or two 1M-bit, bubble memory devices and can be expanded to provide as much as 8M bytes of bubble memory. A controller designed around a Zilog, Inc. Z80 microprocessor reportedly controls bubble device formatting and control and interfaces the bubble memory system to the VME-Bus structure.

The access time of the system reportedly averages under 50 msec, and the effective rate from and to the system is said to exceed 130K bit/sec, the vendor said.

The system is priced at $1,799. A spokesman said a 128K-byte version is also available.

Bubble-Tec, 6800 Sierra Court, Dublin, Calif. 94568.

BOARD-LEVEL DEVICES

OKIOK DATA LTD.
IBM Personal Computer Data Encryption Board

Okiok Data Ltd. has introduced a data encryption board for the IBM Personal Computer, Personal Computer XT and compatible computers.

The encryption/decryption process can be done transparently with disk accesses or communications protocols. Any file may be replaced by an encrypted copy using the data encryption standard algorithm.

An optional secure drive software module automatically encrypts and decrypts data written to a disk as it is read back. This is done transparently and supports all standard IBM disk utilities, Okiok said. The data encryption board requires one short slot on the Personal Computer motherboard and is priced at $400.

Okiok Data Ltd., 3945 St.-Martin Blvd. W., Laval, Quebec, Canada H7T 1B7.

AUXILIARY EQUIPMENT

KEY TRONIC CORP.
Models KB5151J; KB5151

Key Tronic Corp. has announced a full-travel, plug-compatible keyboard said to provide for enhanced operation of IBM's PCjr. In addition, it also unveiled a plug-compatible keyboard for IBM's Personal Computer and Personal Computer XT.

Designed for the IBM PCjr, the Model KB5151J reportedly is a deluxe version of Key Tronic's previous KB5150 keyboard, which has a separate cursor pad and function keys placed across the top. The unit comes standard with the cable connection so that it can be used in any environment. It costs $255.

Designed for the IBM Personal Computer series, the Model KB5151 is said to be a low-profile unit featuring separate cursor command keys, a separate numeric pad, top-row function keys with removable template and a pencil-and-book holder ridge.

In addition, the unit offers familiar typewriter key placement, LED status indicators on all lock keys and incorporates solid-state capacitive switches, microprocessor electronics and positive tactile feedback. The KB5151 has a suggested list price of $255.

Key Tronic Corp., P.O. Box 14687, Spokane, Wash. 99214.

AMDEK CORP.
Color IV

Amdek Corp. has introduced Color IV, a color monitor compatible with the IBM Personal Computer and the Digital Equipment Corp. Rainbow microcomputer.

Color IV is available in two versions, with either red-green-blue analog or digital input. It will display the 16 colors of the IBM Personal Computer or the RS170A, red-green-blue signal of the DEC Rainbow.

According to the vendor, the monitor has 720 by 420 line resolution with a .31mm dot pitch CRT. It has a character display capability of 96 by 24. The cabinetry of the monitor was developed for either industrial environments or commercial applications, a company spokesman said.

The suggested retail price of the Color IV is $995.

Amdek, 2201 Lively Blvd., Elk Grove Village, Ill. 60007.

SIERRACIN/POWER SYSTEMS, INC.
SC1142; SC1143 power-switching supplies

Sierracin/Power Systems, Inc. has announced two power-switching supplies designed for microcomputer applications, the SC1142 and the

Continued on page 76

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MICROCOMPUTERS

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SC1143.

The SC1142 features 62W of power, sufficient for two floppy disk drives; the SC1143 supplies 100W of power, enough for a floppy and a hard disk drive, according to the vendor. The power supplies feature dual input of 90 to 132 and 180 to 248 Vac and 47Hz to 63Hz. They fit in a 6-in. by 12-in. by 2¼-in. chassis.

The SC1142 costs $85; the SC1143 is priced at $95.

Sierracin/Power Systems, 20500 Plummer St., Chatsworth, Calif. 91311.

PC SOFTWARE INTEREST GROUP
IBM programs book

PC Software Interest Group has introduced a book that lists hundreds of public-domain and user-supported programs for the IBM Personal Computer.

Programs cover a wide range of topics, from financial analysis to communications to games. Copies of the book are available for $2.95 plus $1 shipping.

PC Software Interest Group, Suite 130R, 1556 Halford Ave., Santa Clara, Calif. 95051.

BSR (USA) LTD.
AM Computer Care Line

BSR (USA) Ltd. has imported the AM Computer Care Line from Denmark. The products are said to help protect hardware and software from harm caused by dust, static and smoke particles.

The Diskette Safe Pack is a protective mailing box designed to protect 5¼-in. and 8-in. diskettes from electrical and physical damage. It costs $5.

Also offered is the CCC-2 Computer Cassette Cleaner, with cleaning cassette, brush and 20 ml of cleaning fluid, and a Computer Screen Cleaner Kit with 20 ml of cleaning fluid and cleaning cloth — both for $9 each. The CKC-1 Computer Keyboard Cleaner, consisting of 50 chemically treated tissues, costs $12.

BSR (USA), Rt. 303, Blauvelt, N.Y. 10913.

HOFFMAN COMPUTER PRODUCTS
Copy protection services

Hoffman Computer Products, a diskette duplicating firm, has introduced copy protection services for the IBM Personal Computer and Commodore Business Systems microcomputers.

According to the vendor, the service is in response to the problem of software piracy (two to 10 illegal copies of software are made for every legal copy). Services are currently available for copying disks in the 5¼-in. format, single- or double-sided. The basic charge for copying in the 5¼-in. format (in quantity) is less than 30 cents per diskette per side.

Hoffman Computer Products, 1720 Flower Ave., Duarte, Calif. 91010.

MICRO SOFTWARE

BOS NATIONAL, INC.
Mbos/5; Microcobol adaptions

Bos National, Inc. has announced that the Mbos/5 multiuser operating system and Microcobol have been adapted for the IBM Personal Computer and the Personal Computer XT, giving users the ability to add two CRT terminals and to achieve time-sharing capabilities.

Any program or system written in Bos/Microcobol will run on the Personal Computer or Personal Computer XT without recompilation or relinking, according to a spokesman for the vendor.

Porting of such programs and data files to the Personal Computer and XT from other Bos-supported computers can be done by direct transfer of media on 5¼-in. diskettes or using the remote communications feature of Mbos/5 via the serial port of the XT.

The Mbos/5 with runtime Microcobol sells for $1,050.

Bos National, 2560 Royal Lane, Dallas, Texas 75229.

STONEWARE, INC.
Advanced DB Master

Stoneware, Inc. has announced an enhanced version of the DB Master, a computerized filing system for the IBM Personal Computer, Personal Computer XT and compatible machines.

No programming is required to use Advanced DB Master, the vendor said. Advanced DB Master allows the user to store, search, restructure and calculate information and print out customized reports. The user determines how the information is organized.

Features include keystroke macros, text editing and merging, computed fields, user-defined reports, dynamic value tables, array searches, audit trail, screen forms, browse mode, required fields, error prevention, various field types, print buffer and data exchange with other programs and computers.

The system is priced at $595.

Stoneware, 50 Belvedere St., San Rafael, Calif. 94901.

NELSON DATA RESOURCES, INC.
Lazycoder II

Nelson Data Resources, Inc. has announced the second release of Lazycoder program development aids for the IBM Personal Computer and Personal Computer XT.

Continued on page 77

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Continued from page 76

Lazycoder II was designed for the professional programmer. It designs and edits screens for the generation of three types of file maintenance programs — sequential, random and indexed, the vendor said.

Screens may be designed using the top 23 lines of the screen as an electronic blackboard. Screen design has functions such as draw line, frame screen and input field definitions. A high-speed index support module called Fabs/PC gives the Personal Computer the capability of supporting indexed files. Generated programs may be modified to support multiple data screens, the vendor said.

The retail price of $450 includes Fabs/PC, an assembly language module that requires rapid access to very large data files, Fabs/PC sample programs, manuals for Lazycoder-Screen II and Fabs/PC.

Nelson Data Resources, P.O. Box 24247, Omaha, Neb. 68124.

SMC SOFTWARE SYSTEMS
Thoroughbred Operating System

SMC Software Systems, a division of Science Management Corp., has introduced a multiuser, multiprocessing operating system for the IBM Personal Computer XT.

According to the vendor, the Thoroughbred/OS will support three terminals and one printer and allows for simultaneous processing of multiple applications.

The product was designed to turn a single-user Personal Computer XT into a two-user system by adding one terminal and upgrading to 256K bytes of memory.

For a three-user system, a third terminal plus an IBM asynchronous communications adapter are required.

The product offers Personal Computer XT users a line of business and productivity software that includes Thoroughbred Idol, a data base manager, seven accounting modules and full-color business graphics.

The Thoroughbred/OS can be installed on a partitioned hard disk that is shared with IBM's PC-DOS so that users are able to store both the Thoroughbred software and the PC-DOS software on the same hard disk.

The product retails for $795, the vendor said.

SMC Software Systems, 1011 Rt. 22, Bridgewater, N.J. 08807.

UNIPRESS SOFTWARE, INC.
Apple Lisa Unix enhancements; Unify

Unipress Software, Inc. has announced enhancements to its Unix operating system for Apple Computer, Inc.'s Lisa microcomputer.

The Apple Lisa Unix, a full Bell Laboratories System III with enhancements, includes support for Corvus Systems, Inc. 10M-, 20M- and 40M-byte disk drives, as well as the 5M-byte Apple Profile hard disk drive.

According to the vendor, the disks are available from Unipress. The full System III, multiuser Apple Lisa Unix, including C development tools and text processing tools, is priced at $1,495 and is available immediately, the vendor said.

The vendor's Unify data base system is also available for $1,400.

Unify includes a query language, report writer and interactive data entry and validation, according to a spokesman for the vendor.

Unipress Software, 1164 Raritan Ave., Highland Park, N.J. 08904.

BRODERBUND SOFTWARE, INC.
Bank Street Writer

Broderbund Software, Inc. has introduced the Bank Street Writer for the Commodore Business Machines, Inc. Commodore 64 computer.

Features of the program include universal search and replace, block move and unmove, automatic centering and indent, inverse highlighting of text, word wrap, disk storage and retrieve functions with password protection, according to a spokesman for the vendor.

Bank Street Writer comes with a tutorial on a disk that teaches basic principles of word processing. A reference manual and a backup disk are provided free of charge.

The program is available now in disk format for $69.95, the spokesman said.

Broderbund Software, 17 Paul Drive, San Rafael, Calif. 94903.

CONCENTRIC DATA SYSTEMS, INC.
Concentric Information Processor

Concentric Data Systems, Inc. recently announced a data base/information management and report writing program for the IBM Personal Computer that reportedly requires no command language and can be integrated with Visicorp's Visicalc and Lotus Development Corp.'s Lotus 1-2-3.

The Concentric Information Processor allows users to see the results of report writing directly on the screen as they will appear in final reports, according to a company spokesman. A horizontal scrolling capability reportedly allows 132-col. reports to be visually defined using an 80-col. display.

The package is priced at $395 and will be available this month.

Concentric Data Systems, 18 Lyman St., Westboro, Mass. 01581.

MARK OF THE UNICORN, INC.
PC/Intercomm

PC/Intercomm, a data communications package developed by Mark of the Unicorn, Inc., is now available for use on the Zenith Data Systems Z100 personal computer. The package is

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Continued from page 77

said to allow the Z100 to emulate Digital Equipment Corp.'s VT100 CRT terminal.

With PC/Intercomm, Z100 users can communicate with DEC host minicomputers and run full screen applications programs, the company said.

The package communicates at speeds up to 9,600 bit/sec.

PC/Intercomm has 30 programmable function keys and operates under 128K bytes of memory with one disk drive and an RS-232 Ascii communications port.

Priced at $99, the product is available at Zenith dealers.

Mark of the Unicorn, 222 Third St., Cambridge, Mass. 02142.

RYAN-MCFARLAND CORP.

RM/Cobol; RM/Fortran compilers

Ryan-McFarland Corp. has announced its RM/Cobol and RM/Fortran compilers for businesses using the Apple Computer, Inc. Lisa microcomputer.

Both languages are configured to run under the Microsoft, Inc. Xenix and Unisoft System Corp. Uniplus operating systems.

The RM/Cobol compiler is available now, while the RM/Fortran is scheduled to be available by the end of January.

The suggested retail price for each compiler is $1,250, the vendor said.

Ryan-McFarland, 609 Deep Valley Drive, Rolling Hills Estates, Calif. 90274.

DECISION STRATEGIES, INC.

Garden State DRG Support System

Decision Strategies, Inc. has announced a set of microcomputer-based software modules designed to help hospitals implement federal Medicare reimbursement programs.

The Garden State DRG Support System is designed to operate on an IBM Personal Computer or Personal Computer XT as a standalone system or as a support system for other computer systems or services. Features reportedly include the ability to integrate with other systems on an upload or download basis and the ability to review patient records while the patient is still in the hospital.

Total hardware and software cost for the system, available now, ranges from $15,000 to $30,000.

Decision Strategies, 174 Forbes Road, Braintree, Mass. 02184.

SOFTWARE TECHNOLOGY FOR COMPUTERS, INC.

Creator

Software Technology for Computers, Inc. has announced a software package designed to enable personal computer users to tailor a variety of applications to their particular needs.

The Creator reportedly runs on the IBM Personal Computer; the Apple Computer, Inc. Apple II and IIe computers; the Compaq Computer Corp. Compaq Portable Computer; and other IBM-compatibles.

According to the company, users can design their own programs by selecting one of 10 ready-to-customize work areas and then answering English-language questions that appear in a step-by-step process on the screen. The Creator is also said to offer additional English-language routines outside of those 10 areas.

Among the applications included are word processing, data base management, bar graphs, mailing list and invoicing.

The package is priced at $300 for the IBM Personal Computer and Compaq and costs $250 for the Apple II and IIe.

Software Technology for Computers, 153 California St., Newton, Mass. 02158.

VAN L. ENTERPRISES

Format 1-2-3

Van L. Enterprises has introduced Format 1-2-3, a general-purpose utility for the IBM Personal Computer that converts reports and data files into a format compatible with the Lotus 1-2-3 spreadsheet program from Lotus Development Corp.

Format 1-2-3 is said to convert any alphanumeric text file into a form that is recognized and directly loadable by Lotus 1-2-3. According to the company, the utility program can convert

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entire reports; conversely, the user can select specific variables or columns to be converted.

Format 1-2-3 requires a Personal Computer with 64K bytes of memory, one disk drive and the PC-DOS 2.0 operating system.

It is available for $100, according to a spokesman for the vendor.

Van L. Enterprises, Box 849, Marina, Calif. 93933.

MICROGRAFX
PC-Draw Version 1.3

Micrografx recently announced PC-Draw Version 1.3 to provide users of its IBM Personal Computer graphics package with color support, presentation graphics, improved user prompts, improved windowing and color overlay capability.

The company also announced support for the Hewlett-Packard Co. HP 7470A plotter.

The enhanced version of PC-Draw also reportedly provides improved user prompts for parameter entry, improved symbol scaling and an improved alternate text with characters said to utilize 50% less string space than in the previous version.

Version 1.3 is available to existing users for $50, a spokesman for the vendor said. A module for support of the HP 7470A plotter is available for $50, along with a plotter driver for $50, the spokesman said.

Micrografx, Suite 703, 1701 N. Greenville, Richardson, Texas 75081.

NEC INFORMATION SYSTEMS, INC.
Graphplan

NEC Information Systems, Inc. recently announced that users of its APC microcomputers may now obtain Chang Laboratories, Inc.'s Graphplan package, which runs under Digital Research, Inc.'s CP/M 86 operating system and includes an electronic spreadsheet and business graphics.

The package is reportedly compatible with Chang's Microplan package and allows users to edit data, perform mathematical and statistical computations, do "what-if" analysis and perform numerical ranking of data and alphabetical sorting of rows and columns.

Graphplan will operate on both color and monochrome display terminals and is available for $295.

NEC, 5 Militia Drive, Lexington, Mass. 02173.

RADIO SHACK
Color Disk Graphics; Pocket Organizer

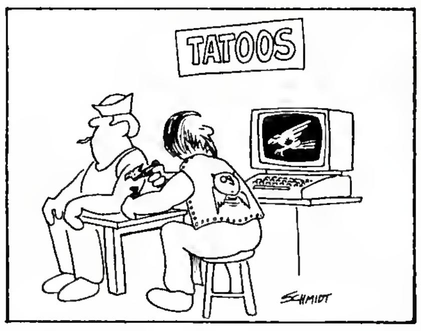
Radio Shack recently announced software packages for its TRS-80 Color Computer and the TRS-80 Pocket Computer 2.

The Color Disk Graphics package reportedly allows plotting of color charts and graphs on the Color Computer. The package requires either 16K-byte or 32K-byte versions of the Color Computer with extended color Basic, a color television, disk drive and the vendor's Disk Controller Pack.

Pocket Organizer is a personal organizing aid for the Pocket Computer 2 that reportedly stores a list or queue of things to do. Using the package, lists of appointments, activities or tasks may be reviewed, edited, deleted, printed and saved on tape.

Color Disk Graphics is priced at $49.95, and Pocket Organizer is priced at $19.95.

Radio Shack, 1800 One Tandy Center, Fort Worth, Texas 76102.



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The overwhelming acceptance of ANSI X3.64 has revolutionized the future of trans-system communication and software compatibility. Now TeleVideo steps forward with the ultimate complement to that revolution. The ANSI equipped TeleVideo 970 terminal.

The 970 takes the lead in utilizing the advantages of the ANSI code structure. It's 32 non-volatile function keys literally automate ANSI code command entry. Other features include VT-100 compatibility, block mode operation, block graphics and attributes and a totally reconfigurable keyboard. An RS232 printer port with built-in buffer is standard. All this is packaged in the 970's unique vertical convection cooling tower. It protects sensitive circuitry without the noise of conventional fan-cooled construction.

In terms of operator comfort the 970 has no equal. The keyboard with ten-key accounting pad is ergonomically designed with a naturally contoured palm rest and sculpted keys. The non-glare 14 inch screen allows maximum readability in either the 80 or 132 column format. And you can display double-high, double-wide characters on the same fatigue-free background we've been applauded for throughout the industry. Screen tilt adjusts at a touch to further fight operator discomfort.

Of course, as with all TeleVideo terminals, 970 service is available nationwide from General Electric Instrumentation and Computer Service Centers.

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COMPUTER INDUSTRY

FCC edict raises MCI, GTE spirits

INDUSTRY INSIGHT

BILL LABERIS

If nothing else, the Federal Communications Commission's (FCC) reluctant decision this month to scale down access charge increases for AT&T competitors has removed a lot of the uncertainty that had clouded matters for companies like MCI Communications Corp. and GTE's Sprint.

First, it should be noted that the pressure brought to bear on the FCC by Congress, the U.S. Justice Department and others to ease up on access charges of AT&T's competitors was warranted. Why should the MCIs and Sprints pay 75% of the access charges borne by AT&T when they do not have anything approaching 75% equal access to the networks of the local phone companies (nor will they for some time to come)?

Also, AT&T's implied threat, that it would lower long-distance rates only if the FCC maintained its access charge structure, may prove just that, as the company will likely still cut long-distance rates, to meet the competition, if for no other reason. AT&T was undoubtedly happy that the FCC and not Congress will be the final arbiter in the access charge matter, as Congress was leaning toward a rate structure that might have proven unjustifiably harsh on AT&T.

As a result of the revised FCC decision, MCI and its brethren this year will face access charges in the $335 per month per line area — more than the $234 mulled by Congress and far less than the $560 under the FCC's original plan. The difference between what AT&T pays — about $740 — and what its competitors pay will be erased once all long-distance suppliers have true equal access to the local phone companies' networks.

MCI said the savings it realizes via the revised plan will not impact its aggres-

See **FCC** page 92

HP axes 32-bit supermini plans

By Jeffry Beeler
CW West Coast Bureau

PALO ALTO, Calif. — Hewlett-Packard Co. has dropped its plans to announce a 32-bit supermini that would compete with Digital Equipment Corp.'s VAX-11 series, but it will add a second model to its family of mainstream personal computers this spring.

HP has decided "to skip the interim step" of adding a 32-bit processor to its existing 3000 series of 16-bit minicomputers, a company spokesman disclosed during a Jan. 20 telephone interview. Instead, the firm intends to develop an alternative computer line "based on a 'breakthrough' technology now under development in our labs."

The spokesman declined to reveal any specifics about the experimental technology or to predict when it will become commercially available, although he ruled out the possibility that the successor to HP's 3000 line would be introduced this year.

The source also refused to discuss details of HP's upcoming personal computer announcement other than to say that it will involve new peripherals and an additional processor, which will be "related" to the company's existing Model 150 micro.

HEWLETT PACKARD

HP's recent decision to bypass the 32-bit supermini arena contrasts sharply with the company's earlier statements about its short-term business systems plans. In November 1982, when it introduced its 32-bit, 9000 series engineering workstation, the firm publicly committed itself to developing a commercial version of the same product.

But 14 months later, during a Jan. 18 security analysts' meeting, HP reversed its original position and cited lack of user demand as the main reason behind its unexpected shift in strategy. "The announcement of a 32-bit business computer is apparently of much greater interest to security analysts, who are watching DEC and its VAX systems, than it is to our customers," the spokesman said.

For users of the company's 3000 series business minis, the main systems concerns are preservation of their existing software and HP's ability to periodically enhance the product line's throughput and other performance features, he added. Thus far,

See **HP** page 92

NCR, Burroughs earnings up

Two of the "bunch" — NCR Corp. and Burroughs Corp. — have reported strong increases in both sales and earnings for 1983, with bottom lines buoyed by especially strong fourth-quarter performances.

NCR reported record profits of $288 million, or $10.55 per share, for the year ended Dec. 21, a 23% increase over the previous year.

The company also announced that it had increased the quarterly dividend from 65 cents per share to 80 cents per share, and the board of directors will ask shareholders at the annual meeting April 18 to approve a 4-for-1 stock split. That split would make 3.2 million shares available for options and other purposes, NCR said.

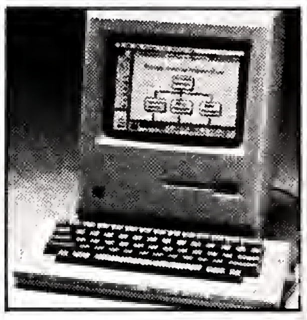
Fourth-quarter earnings increased by $20.4 million, 22% over the year-ago quarter. Revenues rose by 6% for the year to $3.7 billion and for the quarter by 7% to $1.06 billion, according to the company.

NCR President and Chief Executive Officer Charles E. Exley Jr. said incoming orders were up substantially for the year and the fourth quarter across the company's major product lines. Profits in the last quarter benefited from "effective control of costs, expenses and asset levels."

With the company just entered into its century year, Exley said NCR is beginning 1984 "in the strongest financial position in recent company interest." Liquid assets and internally generated funds will allow the company to finance development programs readily, he added.

Burroughs last week reported that 1983 earnings increased to $197 million or $4.60 per share. The earnings, which included fourth-quarter profits of $81.4 million providing $1.81 per share, jumped from

See **NCR** page 82



Micro watchers say Apple's Little Mac could bring out the worst in IBM and others/**83**

As remote computing's fortunes decline, Boeing seeks more fertile fields/**86**

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- Ad hoc industry group bending ears in Washington in fight for favorable tax treatment/**82**
- Study group advising Reagan on ways to defuse labor-business friction/**85**
- Microsoft was number one in 1983, but look out for Lotus in '84/**89**

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Industry gets a voice in tax reform debate

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Mindful that 1984, an election year, will see much talk about tax reform but very little action, the Ad Hoc Electronics Tax Group has entered the debate with recommendations for a united industry push for more favorable tax treatment, an effort the panel hopes will bear fruit in the coming years.

At a Jan. 18 press conference here, members of the group, which represents 20 leading electronics industry firms, including Control Data Corp., Data General Corp., Digital Equipment Corp., Harris Corp., Hewlett-Packard Co., Honeywell, Inc., IBM, NCR Corp. and Sperry Corp., presented its report to five industry associations [CW, Jan. 23].

Among the recommendations submitted to the associations for consideration and support were:

- A permanent research and development tax credit and extension of the 1981 law that instituted the credit to cover depreciation on R&D equipment.
- Extension of recent, favorable equipment-investment tax incentives to the more short-lived equipment common to high-technology electronics companies.
- More favorable tax treatment for industry foreign income and employee equity participation programs and amended foreign tax-credit provisions.
- A value-added tax as the mechanism for whatever additional revenues Congress decides are necessary to balance the national budget.

Robert Kirkwood, HP director of government affairs and chairman of the ad hoc panel, said he expects the associations may differ in what recommendations, if any, they decide to support. The report was praised by the American Electronics Association, the Computer and Business Equipment Manufacturers Association, the Electronics Industries Association, the Scientific Apparatus Makers Association and the Semiconductor Industry Association.

Kirkwood said the year-long study effort was necessary because the many pieces of legislation to assist high-technology firms are stalled in Congress. He said the industry realized it must develop a consensus on tax reform before these and related proposals come up for serious congressional consideration.

Kirkwood suggested the report could become a blueprint for a candidate's efforts to solicit support from high-technology industries. For instance, he said, if a candidate does not support permanency of the 1981 R&D tax credit, it would be "a telltale sign" that he is not supportive of high technology.

The recommendations are especially suited for the electronics industry, according to Emil Sunley, director of tax analysis for Deloitte Haskins & Sells, which provided economics advice to the ad hoc group. Sunley noted that high-technology firms pay higher taxes than other industries. He cited statistics showing the 1982 effective tax on U.S. income was 26.5% for computer and office equipment firms and 22% for firms in the instrument industry. This compared, he said, to an overall corporate effective tax rate of 16.1%.

In general, Sunley said the electronics industry does not benefit from the "incentive structure" of the current tax code, which he said is aimed at manufacturing firms that are heavily debt-financed, rely on long-lived equipment and concentrate on domestic operations.

Electronics firms, with their need for large sources of capital, large R&D expenditures, quickly obsolete equipment and international scope of operations, are under a disadvantage in current tax law, he said.

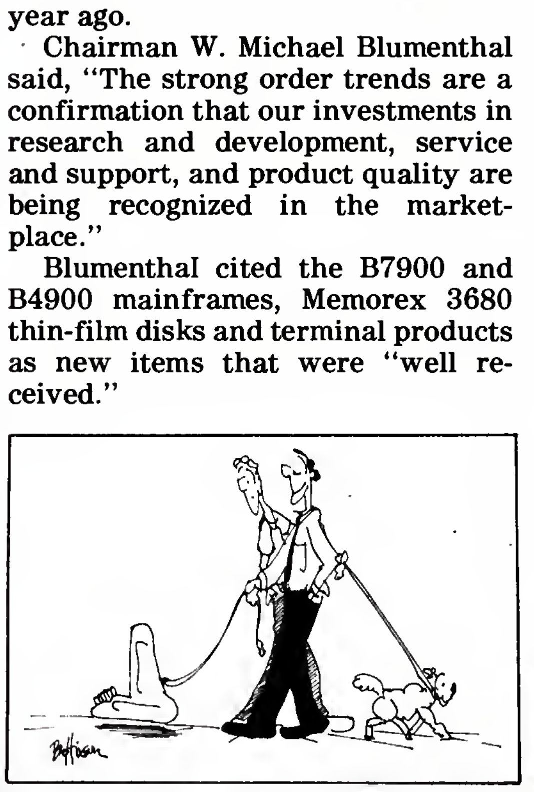
NCR from page 81

1982 full-year earnings of $117.6 million and $2.80 per share.

The company reported 1983 revenues of $4.38 billion, up 5% over 1982, while fourth-quarter revenues grew by a record 17% to $1.3 billion compared with the same period a year ago.

Chairman W. Michael Blumenthal said, "The strong order trends are a confirmation that our investments in research and development, service and support, and product quality are being recognized in the marketplace."

Blumenthal cited the B7900 and B4900 mainframes, Memorex 3680 thin-film disks and terminal products as new items that were "well received."



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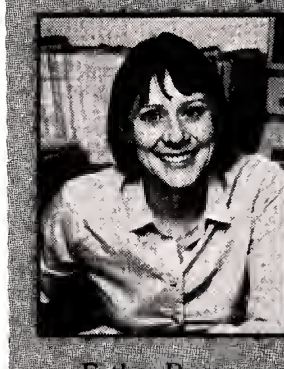
(Exhibitors as of Dec. 15, 1983)

Conference Speakers



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plus many more!

Macintosh debut seen testing micro rivals

By Robert Batt
CW West Coast Bureau

SAN FRANCISCO — The anticipated long-term success of Apple Computer, Inc.'s newly launched Macintosh personal computer [CW, Jan. 23] has led some industry observers to speculate about the impact on the company's microcomputer rivals, most notably IBM and AT&T.

Mike Murphy, partner in the investment analysis firm of Venture Capital Management, Inc. and coauthor of the California Technology Stock Letter, believes the introduction of the Macintosh will reveal weaknesses in IBM's Personal Computer product line.

"With Apple gearing up for an annual production of 600,000 Macintoshes, the new product will reveal a flat spot in demand for IBM's [Personal Computer], and the shortage of IBM machines will end. This will help dispel the mystique in the marketplace about the [Personal Computer] and will cause headaches for both IBM and IBM look-alike products," he asserted.

Greg Kelsey, investment analyst at Hambrecht & Quist, maintained that the Macintosh, which is expected to add up to 40% more to Apple's current revenues of almost $1 billion, will also give Apple added status among its dealer network.

IBM's increasingly successful attempts to sell the Personal Computer through its direct sales force have left many distributors anxious about their future partnership with Big Blue, he said.

Apple, on the other hand, intends to use its strength in the dealer network to promote its new product offerings, and the company claims the Macintosh will be sold by all 1,500 of its accredited dealers in North America, plus 1,500 dealers overseas.

Industry experts also expect the Macintosh to affect purchasing decisions in medium- and large-scale corporations and slow down the acquisition of IBM Personal Computers.

The data processing manager, Murphy asserted, will want to take a close look at Apple's new product line before buying further quantities of IBM Personal Computers.

Murphy claimed the Macintosh will force IBM to heed user complaints that programs are running too slowly on the Personal Computer and will encourage Big Blue to come out with a new version with an upgraded chip — a variant of Intel Corp.'s powerful new 80186 — by the fall of this year.

Murphy predicted that IBM will ask semiconductor manufacturer Intel to design a proprietary chip for the Personal Computer that will put independent software developers in the delicate position of having to choose between supporting IBM microcomputers or go to its competitors such as Apple.

This view was reinforced by Ken Lim, personal computer industry analyst at Dataquest, Inc., a San Jose, Calif.-based market research firm. "IBM is not going to leave the [Personal Computer] architecture as open as it currently is for too much longer," he attested.

According to industry pundits, the other company most likely to be affected by a successful Macintosh drive will be AT&T, owner of the rapidly rising Unix operating system.

Murphy claimed there is a strong possibility that AT&T will be interested in acquiring Macintosh on an OEM basis for the purpose of running Unix on the new machine.

"If AT&T comes out with a multiuser microcomputer system, it makes good technological and business sense for them to sign an OEM agreement with Apple in order to develop a single-user system as well," he suggested.

In the event of such a scenario, Murphy added, personal computer users will be confronted with three different standards — an IBM standard, a Unix-based standard from AT&T and an Apple 32-bit standard.

Big Eight firm buys Macintosh

NEW YORK — Peat Marwick, the international accounting firm, has bought 2,500 Apple Computer, Inc. Macintosh microcomputers introduced just last week.

The computers and peripheral equipment will cost Peat Marwick $7.5 million and reportedly will be used with the accounting firm's proprietary software — Systems Evaluation Approach Computerized Audit Supports (Seacas) — beginning after the April delivery of the micros.

Peat Marwick partner in charge of auditing, John D. Collins, said the Macintosh could "dramatically reduce" the projected five-year estimate for realization of Seacas' full potential. The Macintoshes will be used by Peat Marwick's 7,000 auditors for communications, analysis and modeling.

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The Benefits of the IBM PC for Small Businesses
Financing Options and Tax Advantages
Available Add-Ons and Peripherals
Software: What's Available and How to Find It
What Do the Compatibles Have To Offer?
How I Became Compatible With My IBM PC
Medical/Dental Applications for the PC
The PC in the Law Office
PC's and Real Estate
Manufacturing Resource Planning with the PC
Investment Software for the PC
CPA Software: The Bottom Line
Software for Insurance Applications
Distributed Control Software for the PC

Thursday, February 2, 1984
User Sessions:
The Anatomy of the IBM PC
Defining Levels of Compatibility Between Systems
Overview of Compatibles: Desktops and Portables
Word Processing Software
Database Management Software
Business Graphics Software
Analyzing Your Software Requirements
Overview of Major Business Applications Software
Integrated Software Solutions

Friday, February 3, 1984
User Sessions: The PC in the Corporate Environment
Review of Policy and Planning Issues
Implementation Strategies
Use of PC to Mainframe Communications (Includes Security Issues)
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Group to advise Reagan on industrial policy

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — A primarily Democratic study group of labor, industry and former government leaders this month recommended a coalition of their three sectors to advise the president on industrial policy matters.

The Industry Policy Study Group worked for a year to develop ways to defuse what it sees as a growing adversarial relationship between business and labor as the country moves away from reliance on traditional manufacturing and toward a more service-oriented, high-technology economy.

Chief among its recommendations is an Industrial Development Board, representing government, business and labor, to advise the president and develop "cooperative strategies to promote industrial growth." The board would allow consultation with industry and labor groups and make sure the government does not work against private sector efforts, the study group said.

The board would be supported by an Industrial Finance Administration, initially controlling $5 billion, that would provide loans, guarantees and other support on a 50:50 basis for private programs to advance U.S. industrial competitiveness. The finance group would implement the president's program and not act as an independent financial organization.

R&D urged

In addition, the panel called for an expanded commitment to technological research and development. "One of the first subjects on the board's agenda should be to consider expanding federal assistance for research and development," possibly through a new, separate agency, "with greater attention to manufacturing processes and commercial applications," the study group said.

The group said U.S. industry has developed a strong "knowledge and research capacity" but has in some cases underinvested in development of marketable products and processes. The U.S. may also want, as other countries have decided, to increase "support for and coordination of industrial R&D as a central element of programs designed to promote particular high-technology industries," the panel's report said.

The panel was put together by the Center for National Policy, a research organization chaired by former Secretary of State Cyrus Vance, which is made up primarily of prominent Democrats. The panel included W. Michael Blumenthal, chairman, Burroughs Corp.; Morton H. Meyerson, president, Electronic Data Systems Corp.; Senators Bill Bradley (D-N.J.) and Edward M. Kennedy (D-Mass.); Glenn Watts, president, Communications Workers of America; and other leaders.

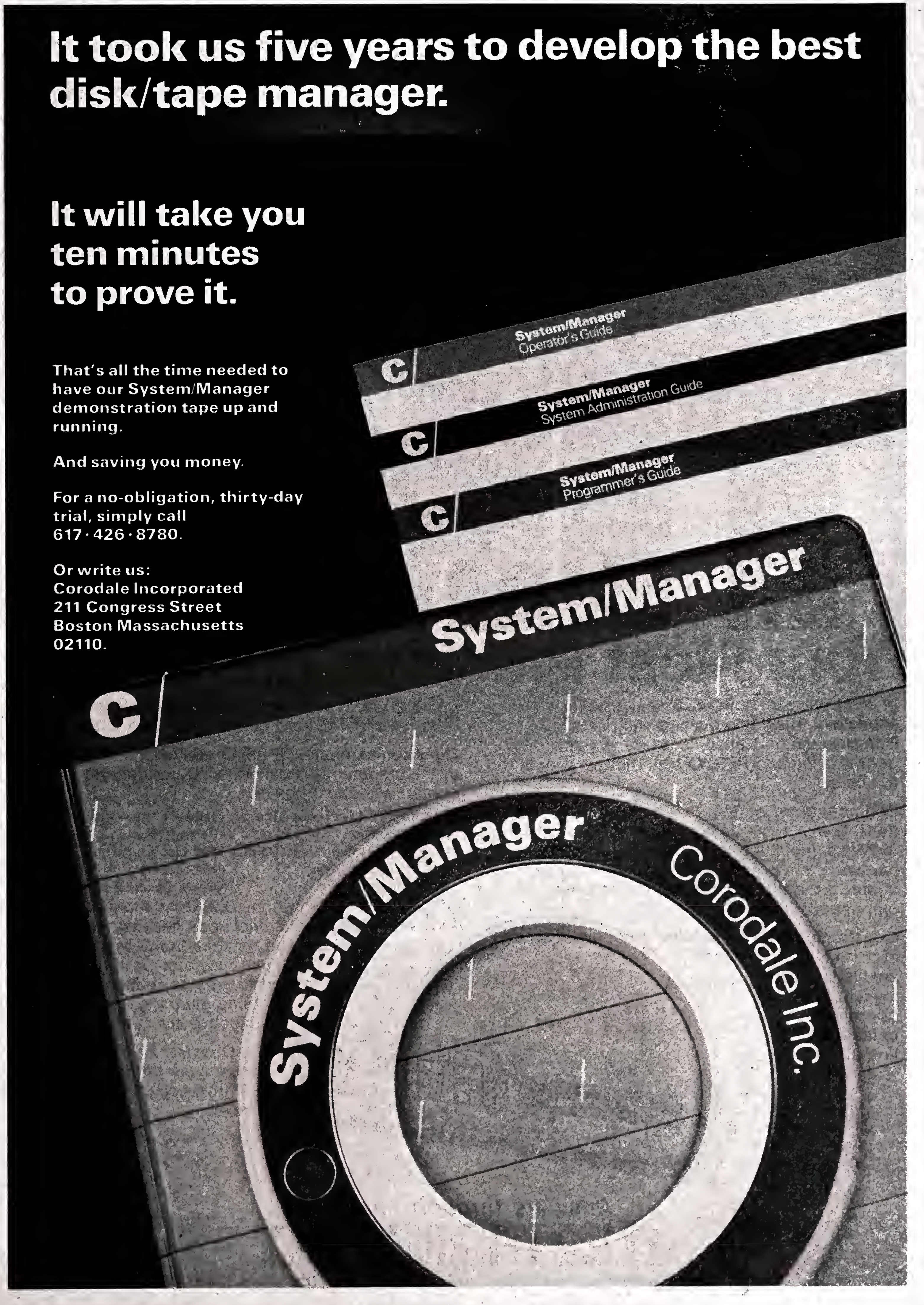
At a press conference this month, Irving S. Shapiro, former chairman of E. I. du Pont de Nemours and Co., said the traditional adversarial relationship between major economic sectors in this country is impeding industrial development in the U.S., particularly where this country competes with foreign nations that have strong government-supported industrial policy mechanisms.

But, he said, "We offer no industrial policies today." Rather, he said, the panel was recommending a process to facilitate a sensible and cooperative approach to solving problems of trade, business development and employment.

Lane Kirkland, president of the AFL-CIO, said organized labor has a large stake in the development of U.S. industrial policy because labor pension funds, now representing approximately $700 billion to $800 billion, constitute the largest and most rapidly growing source of capital formation in this country.

Workers should be able to ensure that these funds are used for "constructive and productive" uses that will make this country more competitive internationally, and not spent primarily to finance corporate mergers and other purposes, which, he said, "do not enhance the domestic economy or the employment prospects of working people."

The panel's report comes as Democrats and Republicans have begun lining up their respective industrial policies as the campaigns for the upcoming general election go full force. Both parties have recommendations for cooperative development of industrial policies. However, the Republicans have steadfastly refused to consider any government financial agency to implement industrial policy.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Boeing Computer to enter net services mart

NEW YORK — After withstanding a year of 7% growth while the rest of the computer industry boomed, Boeing Computer Services Co. (BCS) has decided to expand business beyond its original time-sharing base. At a press conference here earlier this month, Robert L. Dryden, BCS president, said the company is entering the commercial information networking services market.

BCS BOEING COMPUTER SERVICES COMPANY
A Division of The Boeing Company

The $800 million Bellevue, Wash.-based unit of the Boeing Co. thus becomes the second time-sharing firm this year to announce a new business direction as a vehicle to expand without depending so heavily on remote computing, a slice of the industry which stagnated last year. Earlier this month, Comshare, Inc., an Ann Arbor, Mich.-based time-sharing company, trumpeted a "complementary marketing pact" with IBM on its System W decision support system software [CW, Jan. 9].

Time-sharing firms "will fail unless they meet the challenges of the changing marketplace," Dryden said in prepared remarks delivered to reporters and analysts here. The new moves, he said, were designed to put the company back on a faster, 20%-plus growth track.

In a series of announcements, Dryden said BCS will this year:

■ Begin to offer end-to-end networking capabilities for customers that already have data processing equipment installed. The Boeing commercial network will provide host-to-host and terminal-to-host communications no matter what the brand name on the host computer or interactive terminals, Dryden said.

■ Initiate sales of its Systems Network Architecture (SNA) services to the merchant market. First-time SNA users may buy into Boeing's network, while users with an SNA network of their own may connect up to Boeing's in order to gain access to the firm's remote computing services.

■ Begin to deliver remote computing services to large-scale data centers on a fixed-price and fixed-resource basis. However, John Spencer, marketing director, said BCS had yet to settle on a fixed-price schedule.

■ Begin consulting with companies in search of an "integrated solution to their office information system problems," Dryden said, adding that Boeing would guide its consulting clients "without allegiance to a particular hardware product." The new services include requirement definition, systems analysis, design, integration and implementation.

Dryden also announced the formation of a software and education products group. The marketing organization will peddle Boeing-developed software used in office integration and information centers and for manufacturing and engineering as well as productivity tools for DP workers and education, he said.

Capping his announcements, Dryden told reporters that BCS had captured an $18.6 million contract to build an X.25 communications net for the commonwealth of Pennsylvania.

Apple reports 75% profits drop

CUPERTINO, Calif. — On the eve of its big Macintosh announcement last Monday, Apple Computer, Inc. announced quarterly financial results that showed a nose dive in profits despite a 48% gain in sales.

As expected, profits dropped 75% to $5.8 million, or 10 cents per share, compared with $23.5 million, or 40 cents per share, the same period a year ago. The profit line included $2.5 million gained from the settlement of a patent infringement suit brought against Franklin Computer Corp., in which Franklin also agreed not to infringe on Apple's copyrights.

Sales in the quarter swelled to $316 million compared with $214 million the first quarter a year ago. The company also closed the quarter with nearly $188 million in cash.

Most apparent from the results were the increases in research and development (78%), marketing (89%) and cost of sales (85%), each of which grew twice as fast as the growth in sales volume. Stepped-up spending in these areas were required to meet the market challenges and increasing competition in the small systems area, the company had said previously.

John Sculley, president and chief executive officer, said the company experienced record sales of 100,000 units of its Apple IIe, which at the same time suffered from downward price pressure. Profits continued to be adversely affected by "significant increases in . . . expenses and decisions related to our product strategy and organization consolidation," Sculley said.

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Prime's earnings dip; DEC's rise

Prime Computer, Inc. announced last week that its 1983 profits dropped more than 27% from the year-earlier figures, while the leading minicomputer vendor, Digital Equipment Corp., as expected, reported second-quarter earnings were up 32%, a vast improvement over its disappointing first-quarter losses.

Joe M. Henson, president and chief executive officer of Prime, said his company in the fourth quarter ended Dec. 31 showed "substantial progress from the third quarter in terms of revenue growth, profitability and management of expenses."

Fourth-quarter profits, however, lagged behind year-earlier reports by more than $12.1 million. For the year, the company showed a profit of $32.5 million, or 68 cents per share, compared to fiscal 1982 profits of $44.9 million, or 99 cents per share.

Revenues at Prime for the fourth quarter of 1983 and the entire year were substantially ahead of the previous year's revenues. For the quarter, revenues increased $24.5 million to $142.8 million; for the year, revenues grew almost $80 million to $516 million. Henson cited those revenue figures and accelerating orders as evidence the company is positioned "to benefit from an improved economy."

DEC, following its preliminary report a week earlier [CW, Jan. 23], reported profits for the second quarter ended Dec. 31 were up $39.5 million over year-earlier figures to $80.4 million, or $1.41 per share, with revenues increasing 40% over the same period from $1.01 billion to $1.4 billion. Profits for the first six months of the current fiscal year still lagged $21 million behind the first six months of the previous year as a result of the poor first quarter.

The company said it experienced a sharp increase in shipments and orders for personal computers, as well as strong demand for its VAX-11/780, VAX-11/750, Micro PDP-11 computers and office products.

Leasing firm targets SNA

RALEIGH, N.C. — SNA-COM Associates, Inc. is a newly formed leasing and consulting company specializing in products that operate under IBM's Systems Network Architecture (SNA). The founder and president, David R. McCormick, spent 32 years with IBM before starting SNA-COM Associates.

The company will focus on communication controllers (3705, 3725), clustered controllers (3274, 3600, 4700, 8100), terminals (3178, 329X, 360X, 470X), workstations, Personal Computers, Displaywriters, modems and protocol converters.

It will also offer consulting for network growth in non-SNA protocols, migration aids and voice/data local-area network relationships. Technical assistance will be available for backup, reconfiguration and recovery.

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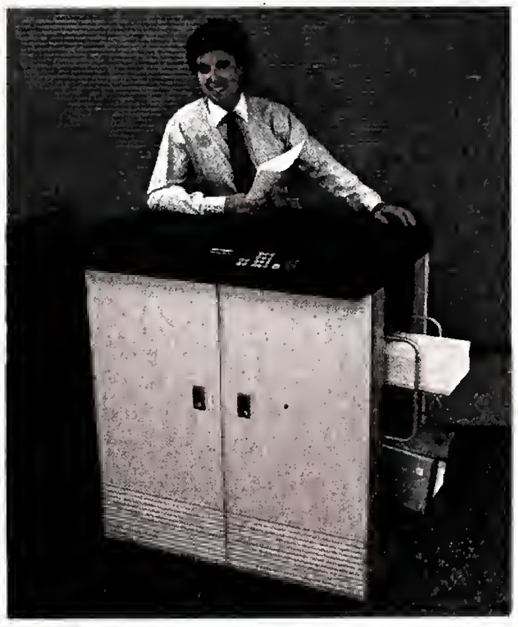

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Senate export bill debate renews controversy

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The 98th Congress returned for its second session last week expecting renewed debate over high-technology export controls, a controversial topic that has heated up dramatically in the two months since Congress adjourned.

Before Congress adjourned last year, the House had passed an updated version of the Export Administration Act, which governs export licensing. The House bill was fairly moderate and had been endorsed by industry. But the Senate had not finished action on its version of the legislation, and export licensing is currently handled under an interim extension of the older export control law.

Certain factions within the Reagan administration, particularly in the Treasury and Defense Departments, have been pushing for stricter licensing procedures. It was expected that this battle, whose outcome is still unsure, would be fought during the upcoming Senate deliberations. But the outlook for Senate adoption of the moderate approach has dimmed considerably.

The recent highly publicized seizure of American-made computers illegally destined for the Soviet Union [CW, Nov. 21, 28] has strengthened the position of export control hardliners. The Commerce Department is now proposing tightening standards for obtaining a single export license for multiple sales of certain high-technology products.

The Commerce proposals have been in the works for about a year, but coming just as Congress starts its final debate on the export bill, they have provoked strong reaction from high-technology industries.

Computer and Business Equipment Manufacturers Association (Cbema) President Vico E. Henriques, for example, issued a statement decrying the administration's effort to link the computer equipment seizure with the export bill renewal. "The administration argument is that the current licensing procedure is too lax, allowing high-tech companies to ship sensitive equipment to our enemies," he said.

Henriques continued: "The argument that the [Export Administration Act] needs more review layers is incorrect. So is the implication that the high-tech industry is trying to weaken safeguards against shipments of critical goods and technologies to America's enemies."

He argued that stricter license review practices "would not necessarily have prevented the attempted diversion" of computer equipment to the Soviet Union. "U.S. industry and government can't afford to waste time, money and manpower in a meaningless exercise in paper-shuffling. Government needs to devote its resources to enforcement so that those who try to divert high-tech exports to our enemies are caught and prosecuted," Henriques said.

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"MT" Video Attribute Control	Yes*	No	No	No	No
Custom Mode	Yes	No	No	No	No
Keyboard LED's	7	1	0	0	0
25th Status Line	Yes	Yes	No	No	No
2-Speed Smooth Scroll	Yes	No	No	No	No
Graphics Characters	Yes	Yes	No	No	No
Configurable Print & Send	Yes	Yes	No	No	No
Set Up Mode	Yes	Yes	No	No	Yes
Settable Tabs	Yes	Yes	No	No	Yes
Choose Protected Attribute	Yes	Yes	No	No	No
Screen Saver	Yes	Yes	No	No	Yes
Max. Number of Displayable Characters on one screen	256**	128	128	128	128
2 Pages of Memory	Opt	No	No	No	Opt
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Warranty (Days)	365	90	90	90	90

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Airline to ship DP equipment

NEW YORK — A service specializing in air transport of sensitive computer equipment has been announced by Sureway Air Traffic Corp.

Computer Express was designed to meet the specialized transport needs of hardware and software manufacturers and other users who move equipment sensitive to jarring, temperature and changes in humidity and magnetic field.

Randy Catlin, vice-president of Sureway, said, "In the 20 years we've been in business, we've never had as many requests as in the last two years for personalized, individually tailored transport in the computer industry."

Sureway, 36-14 32nd St., Long Island City, New York 11106.

Inman to chair ATP group

WASHINGTON, D.C. — Adm. Bobby Inman (USN Ret.) last week was named chairman of the Alliance for Telephone Progress (ATP), a group of companies and trade associations recently formed to amend telephone access charge legislation now pending in the U.S. Senate [CW, Jan. 16].

Inman, deputy director of the Central Intelligence Agency from 1981 to 1982 and director of the National Security Agency from 1977 to 1981, is chairman and chief executive officer of Microelectronics and Computer Technology Corp. in Austin, Texas.

Members of ATP reportedly represent more than one-half of all business phone usage in the U.S.

Study views software mart

Microsoft seen top independent

DALLAS — Microsoft, Inc. has begun 1984 as the largest independent personal computer software publisher. And the three largest publishers of software for office personal computers are also the leading personal computer manufacturers — IBM, Radio Shack and Apple Computer, Inc. — according to the recently released "Office Personal Computer Software Market Report" by Future Computing, Inc.

IBM and Radio Shack each sold between $110 million and $130 million in software for office personal computers in 1983, while Apple totaled more than $65 million. Meanwhile, Microsoft jumped ahead of Visicorp in independent vendor sales, posting software sales of more than $65 million, while Visicorp recorded between $50 million and $55 million in sales last year.

The 300-page report estimated the total value of software sold for office personal computers will climb from the 1983 level of $1.4 billion to $6.7 billion by 1988.

Top-selling spreadsheet

The report also asserted that Lotus Development Corp., a relative newcomer, sold between $45 million and $50 million of its 1-2-3 spreadsheet software, with sales exceeding 20,000 units per month, making it the top-selling spreadsheet program.
units per month and sold over 600,000 copies in 1983, making it the most widely used spreadsheet program.

In addition, the report said Micropro International Corp.'s Wordstar word processing package is selling at more than 15,000 units per month, slightly ahead of Apple's Apple Writer. Future Computing estimated that 300,000 to 350,000 copies of both packages are now in use, not counting those units bundled with personal computer hardware.

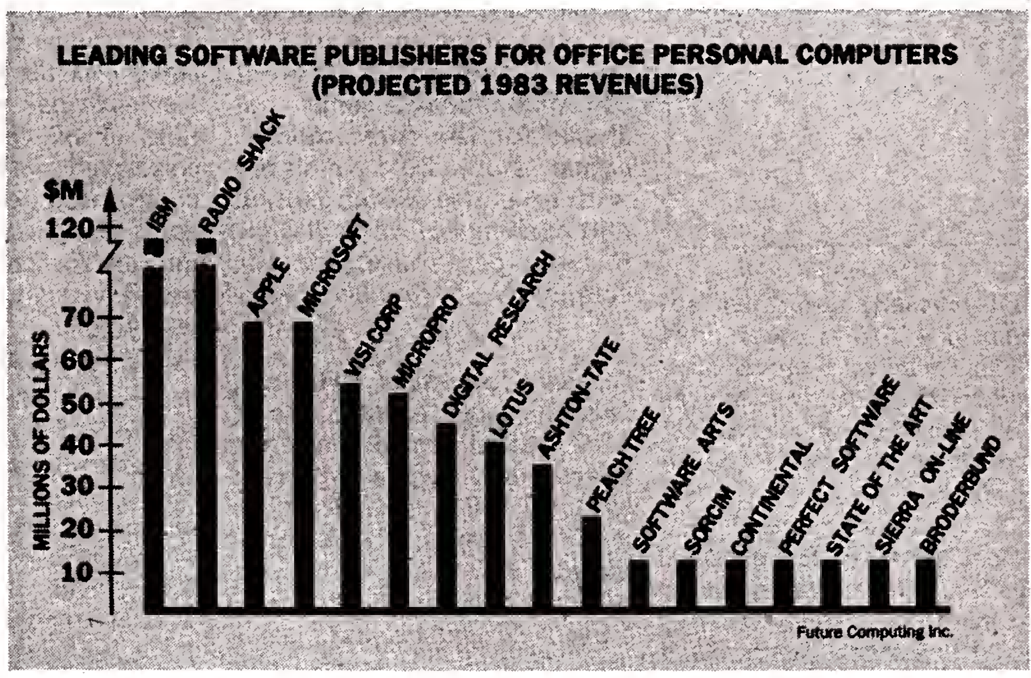
Ashton-Tate's Dbase II and Software Publishing, Inc.'s PFS File are the most popular data base programs, the study reported, with Ashton-Tate's revenues around $35 million to $40 million in 1983, a dramatic increase over the 1982 $7 million to $8 million level.

The market for accounting software, the report continued, reached nearly $300 million for office personal computers last year, up from the $150 million to $170 million level in 1982. The report also indicated that the market for Apple II and Apple II-compatible software will grow to over $800 million over the next three years from a current level of $330 million.

The IBM Personal Computer and Personal Computer-compatible software market, the report added, will grow at more than 60% a year on average over the next five years, from $500 million in 1983 to $5.3 billion by 1988. Big Blue, the report contended, will retain less than 20% of the market for this software by 1988, with third-party software firms accounting for the rest.

"The Office Personal Computer Software Market Report" is available for $3,000.

Future Computing, 900 Canyon Creek Center, Richardson, Texas 75080.



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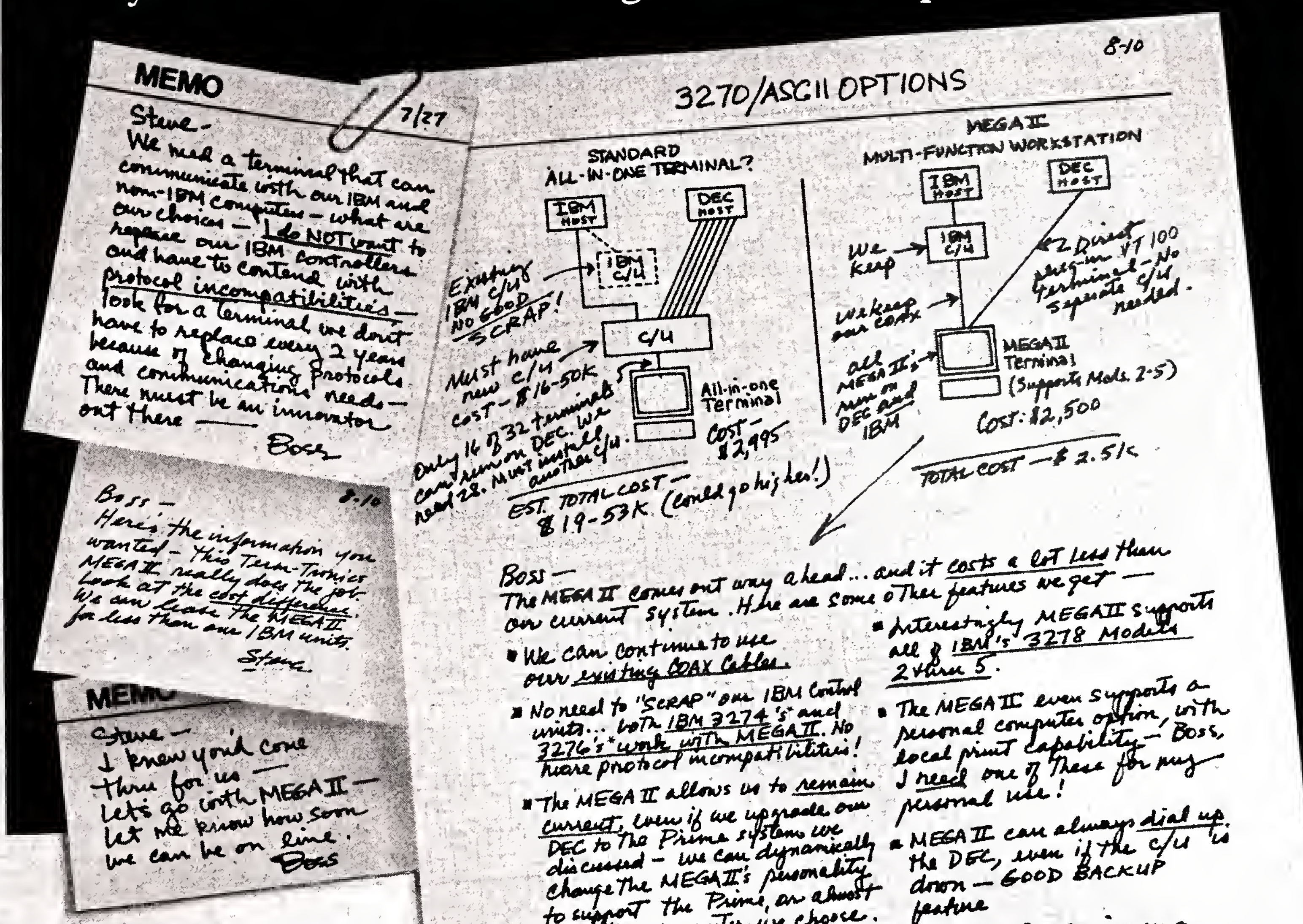

MEMO 7/27

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We need a terminal that can communicate with our IBM and non-IBM computers - what are our choices - I do NOT want to replace our IBM controllers and have to contend with protocol incompatibilities - look for a terminal we don't have to replace every 2 years because of changing protocols and communications needs - There must be an innovator out there —
Boss

Boss — 8-10
Here's the information you wanted - This Term-Tronics MEGA II really does the job. Look at the cost difference. We can lease the MEGA II for less than one IBM units.
Steve

MEMO

Steve —
I knew you'd come thru for us —
Let's go with MEGA II —
let me know how soon we can be on line.
Boss

8-10

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- The MEGA II allows us to remain current, even if we upgrade our DEC to the Prime system we discussed - we can dynamically change the MEGA II's personality to support the Prime, or almost any other computer we choose.
- We can still use all of IBM's new products, like the COAX multiplexer.
- Interestingly MEGA II supports all of IBM's 3278 Models 2 thru 5.
- The MEGA II even supports a personal computer option, with local print capability - Boss, I need one of these for my personal use!
- MEGA II can always dial up the DEC, even if the C/U is down — GOOD BACKUP feature
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NICKELS & DIMES

Honeywell, Inc. has authorized a 2-for-1 stock split in the form of a stock dividend, with additional shares to be issued on or about Feb. 6 to shareholders of record Jan. 6.

■

Bolt, Beranek & Newman, Inc. has filed a registration statement with the Securities and Exchange Commission covering a public offering of up to 927,500 shares of common stock. The underwriting group will be led by Merrill Lynch Capital Markets.

Monchik-Weber Corp. has announced revenues of $5.6 million and a net loss of $112,000, or 3 cents per share, for the three months ended Nov. 30, compared with revenues of $5.5 million and earnings of $298,000, or 8 cents per share, for the comparable period last year.

■

Ask Computer Systems, Inc. has reported earnings of $1.9 million, or 16 cents per share, for the second quarter of fiscal 1984, ended Dec. 31, a 127% increase over second-quarter fiscal 1983 earnings of $841,000, or 8 cents per share. Revenues increased 75% to $15.1 million from $8.7 million for the same period last year.

■

Computer Sciences Corp. reported a 9% profit increase on 2% lower revenues for the third quarter ended Dec. 31. Net earnings were $4.2 million, or 30 cents per share, compared with $3.9 million, or 28 cents per share, a year ago. Revenues were $168.5 million for the period, compared with $172.3 million for last year.

■

Seagate Technology, Inc. has reported a 351% increase in revenues and a 370% increase in net income for the second quarter ended Dec. 31, compared with the same period last year. Revenues were $91.7 million, up from $20.3 million, and income rose to $9.6 million, or 22 cents per share, from $2 million, or 5 cents per share, a year ago.

■

HP

from page 81

customer feedback reportedly indicates widespread satisfaction with the firm's efforts to keep the 3000 family technologically current.

"Our existing product line doesn't suffer either in price/performance comparisons or in benchmark tests with competing systems already available in the marketplace," the spokesman said.

In other developments during the recent security analysts' meeting, HP Executive Vice-President Paul Ely reportedly declined to discuss the Model 150's projected sales figures for the first two months of this year. But in a move that the spokesman characterized as "highly unusual," Ely did project the company's combined 1984 microcomputer shipments at more than 200,000 units.

The HP 150, HP's first personal computer optimized for business applications, will account for "well over half" of those predicted shipments. Although it was introduced only last September, the HP 150 has already attracted 679 authorized dealers — a higher than expected sign-up total — and will likely gain another 300 or so additional dealerships by midyear, the spokesman said.

FCC

from page 81

sive capital spending plan in any way.

However, Karen Mulvaney, who tracks MCI for Rothchild Consultants in New York, said the savings could be applied directly to capital spending or advertising costs, putting less pressure on the company to go to money markets or the stock exchange for funds. Mulvaney added that MCI cannot really accelerate its expansion program any more than it has, as "it's growing its network as fast as it can."

But don't be surprised to see MCI give an extra boost to its electronic messenger service, MCI Mail, started last October. Already the service has 80,000 subscribers, with an attainable goal of 200,000 by year's end. MCI would like it to become a money-maker soon, and a little extra investment now might hasten movement into the black.

■

By now most everyone has experienced Apple Computer, Inc.'s thoroughly unique Orwellian television advertisement, the one with the blonde woman heaving a sledge hammer through a megamonitor being viewed by legions of automatons.

The ad, part of Apple's $16 million media blitz, has people scratching their heads about its meaning, especially people who don't work with computers day after day. But it shouldn't leave any doubt about its effectiveness. With one strategic 30-second spot during the Superbowl, Apple became as talked about at water coolers last Monday as the big game itself. Even if you didn't get the gist of the meaning, you certainly came away with the words Apple and Macintosh emblazoned on your mind.

As to the meaning — obvious to some, obscure to many — Orwell's state and its ubiquitous, mind-narrowing messages have been replaced by IBM in the Apple scenario. Macintosh will liberate users from a burgeoning IBM world, giving them a fresh and clearly preferable departure from the offerings of the monolithic blue giant, the message continues.

Comparing Apple's ad with the more mainstream exhortations of IBM, or any other vendor for that matter, is like comparing the Superbowl with the world curling championships. But will it sell computers?

■

What's up, DEC?

That's what a lot of analysts and Digital Equipment Corp. watchers have been asking for the past several months. First the company shocked the industry with its dismal first-quarter results last October, then reshocked most analysts this month in posting record sales and profits that were double most predictions.

While this recent upbeat piece of news from DEC provoked a 10-point spike in its per-share stock value, at the same time it has DEC watchers wondering just what is going on. How could things deteriorate so quickly and unexpectedly in one quarter, then bounce back so resoundingly the next? Just what were those administrative foul-ups to which the company attributed its first-quarter failings? Will the next surprise be a sooner-than-expected high-end VAX announcement?

There is one surprise to be unveiled the first week in February concerning a major thrust by DEC into a new arena, the $2 billion off-site storage and recovery market. We'll have to wait to see what that and other surprise announcements bring from DEC.

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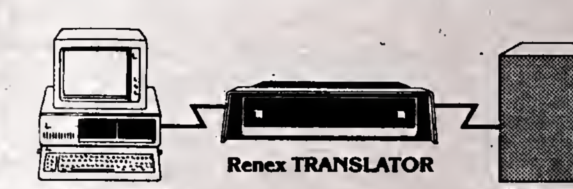

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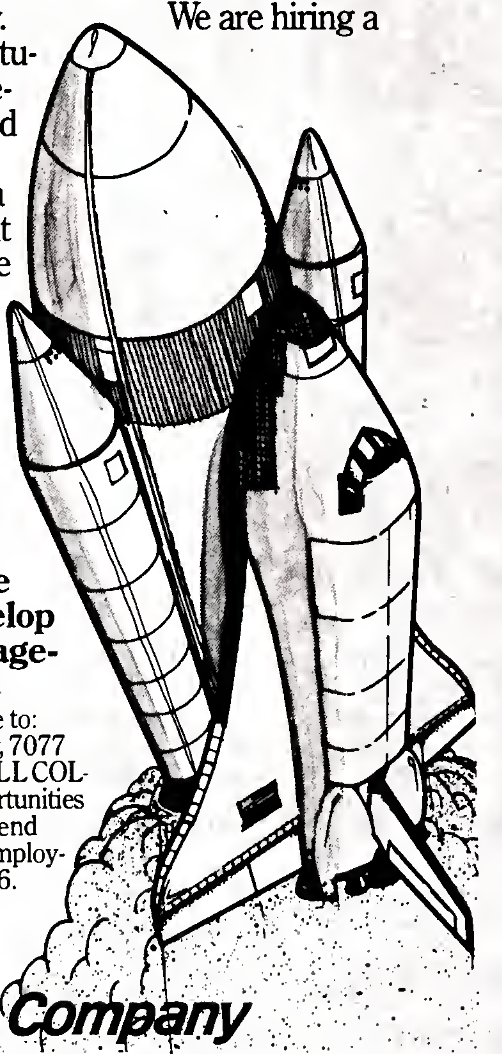

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For immediate consideration call or send your resume to: **Donald C. Quirk,** Lockheed Space Operations Company, 7077 North Atlantic Avenue, Cape Canaveral, Florida, 32920. CALL COLLECT (305) 799-0100. Candidates who wish to pursue opportunities located at Vandenburg Air Force Base, California should send their resume to: Lockheed Space Operations Company, Employment Office, 1100 West Laure Avenue, Lompoc, CA, 93436.

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Director of Human Resources
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5731 State Highway 13
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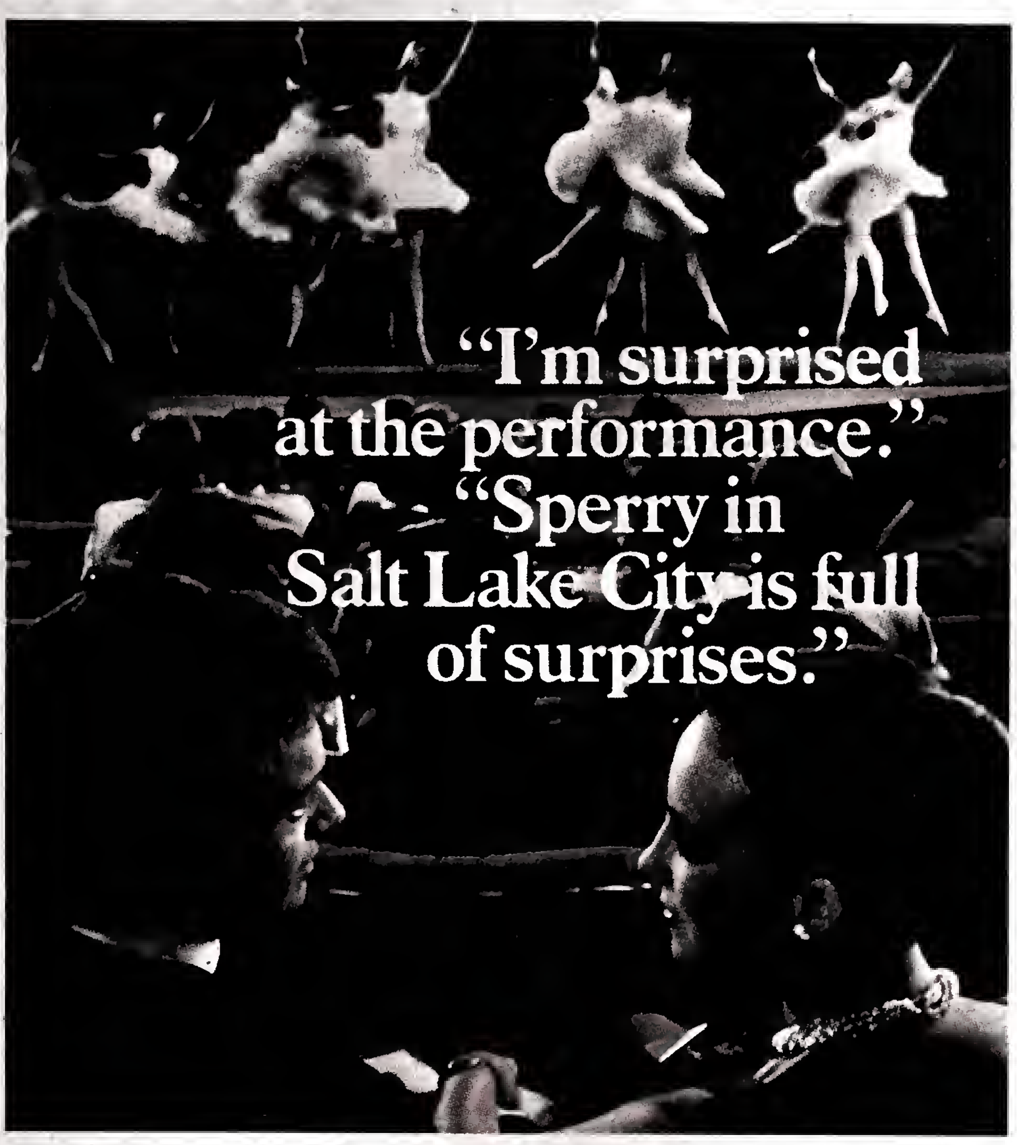
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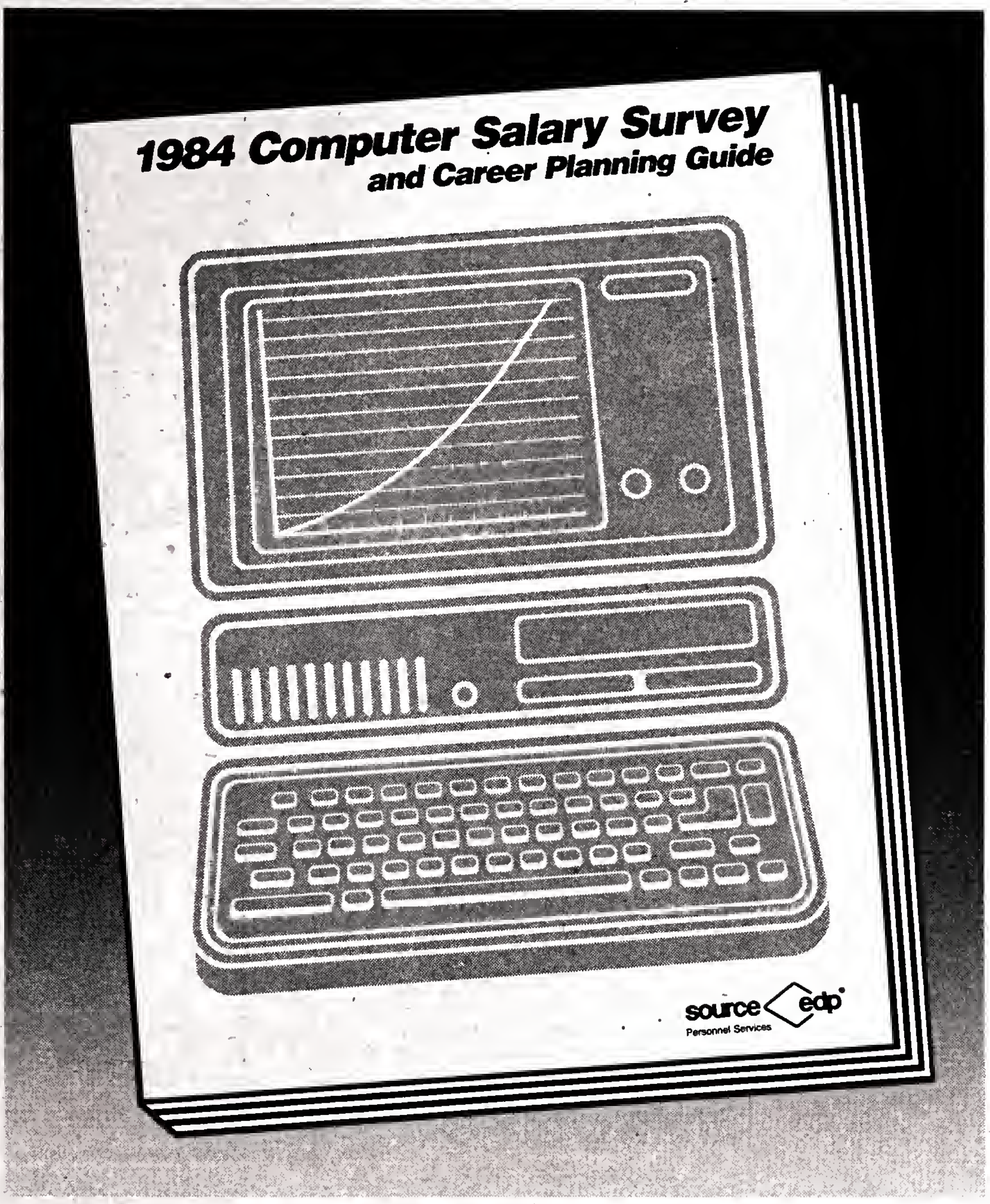

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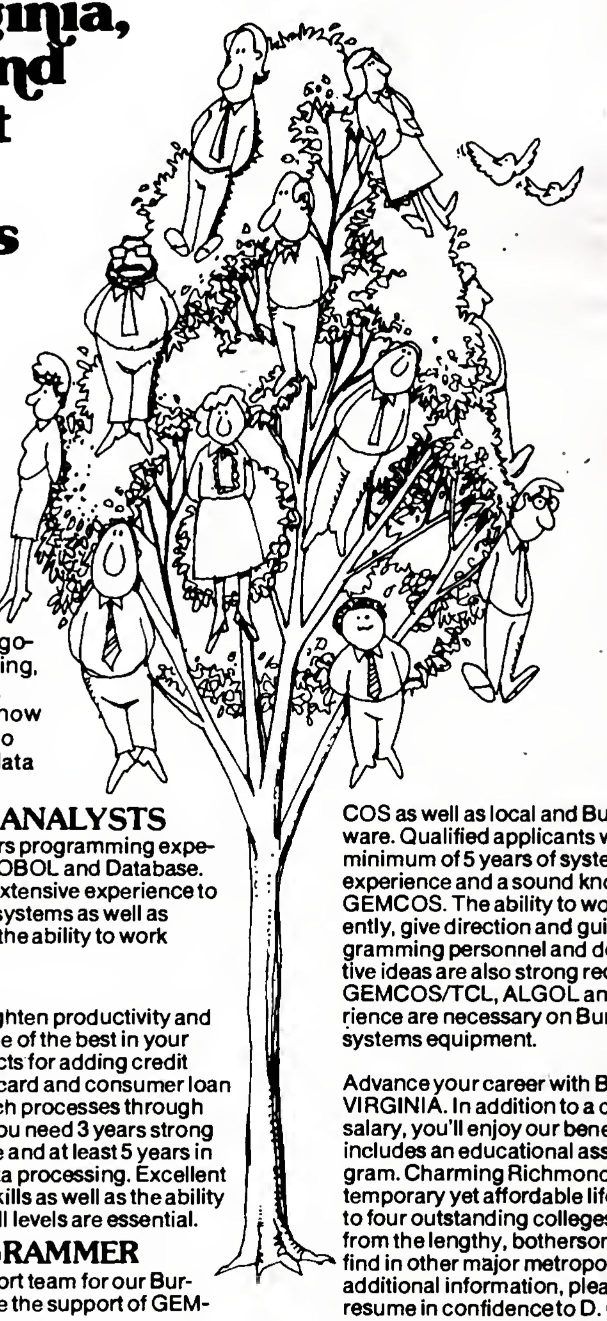

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to assume responsibility for ACF/ VTAM/NCP in an MVS environment. The ideal candidate will also have experience in one or more or the following: 37X5, MSNF or distributed processing. The current environment consists of a national SNA communications network involving local and remote hosts, terminals, and distributed systems.

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to assist the development of effective and efficient Data Communications program applications through 1) technical review of application design 2) application design assistance and 3) development, maintenance and enforcement of standards. Other areas of responsibility will include technical support of the CICS software products. We need a professional with no less than 3 years direct experience with IBM's CICS product and who will welcome the high level of personal interaction needed in this exciting position.

We offer an excellent compensation and benefits package including medical and dental coverage for you and your dependents. To be considered for these positions, please forward your resume including salary history and requirements to:

Manager of Employment
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First National Bank in Albuquerque

PROGRAMMER/ ANALYSTS

The Information Systems Department of First National Bank in Albuquerque has excellent opportunities for Programmer/Analysts to become involved in development and maintenance of both online and batch application systems. We currently run two 4341 computers with MVS and JES2.

Our Information Systems Development Department is seeking professionals with appropriate degrees and/or experience in banking applications as well as experience in IBM/370 Assembler and COBOL. Also helpful would be CICS and OS/JCL coding experience.

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Employee Relations Manager
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DATA PROCESSING/COMMUNICATIONS

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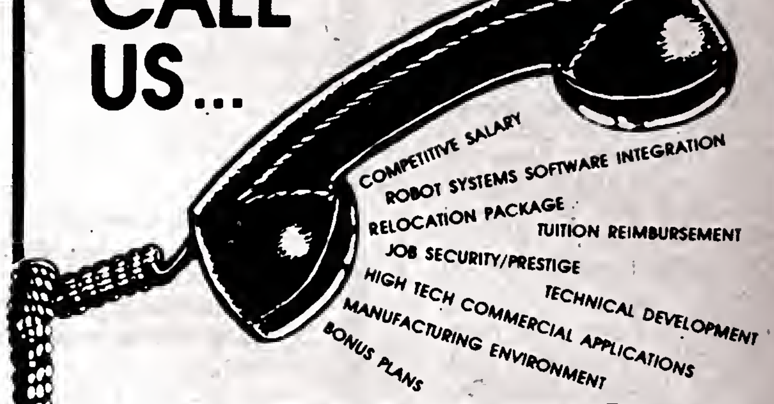

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We are seeking a highly motivated, results oriented Systems Programmer to join our IBM mainframe (43XX) environment. Previous experience of 2-3 years as Systems Programmer with DOS/VSE, CICS, DL/1, ICCF, installation, modification and tuning of systems software is required. Hospital background a definite plus. We offer competitive salaries and excellent benefit program. Please send resume to Personnel Director.

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In this position you will be responsible for maintaining COBOL programs of existing inventory control systems and for the analysis, design of new systems utilizing IBM 4300 series hardware in a DOS/VSE environment; act as technical supervisor for programming and analyst personnel and for matters associated with logistical information processing systems.

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SYSTEMS

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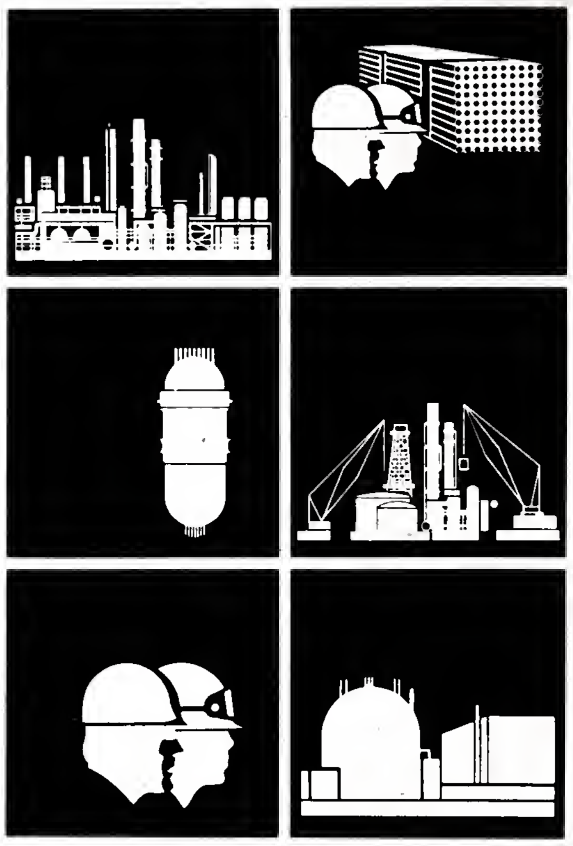

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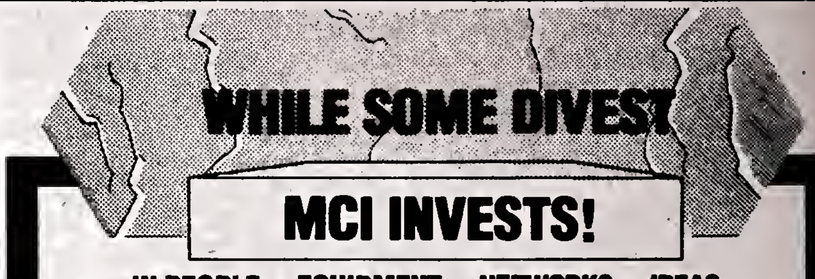

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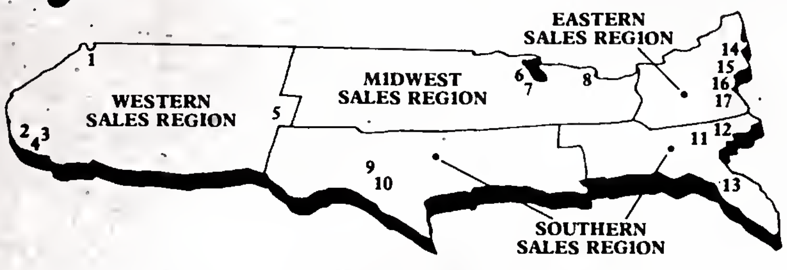

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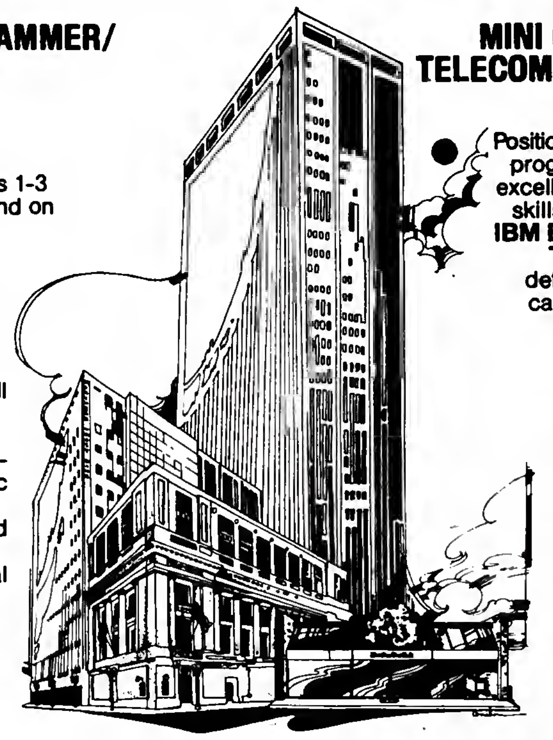

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• Senior Systems Analysts and Senior Programmer Analysts

This team will be responsible for major systems and programming analysis, redesign, redevelopment, and modification efforts for primary sub-systems. Qualifications include three to six years of COBOL programming background. MSA, accounting/financial applications and CICS experience extremely desirable.

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Data Processing

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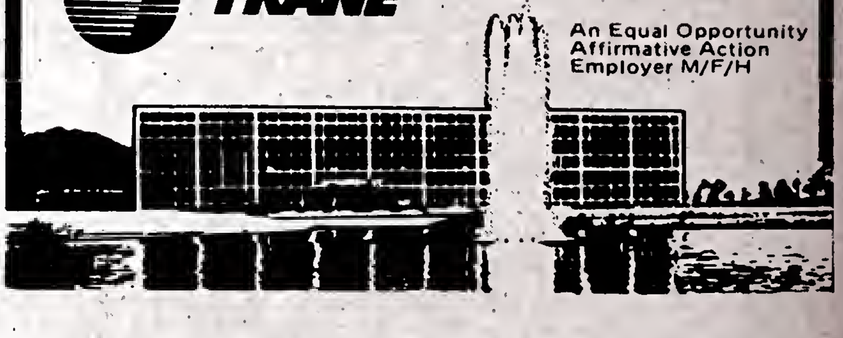

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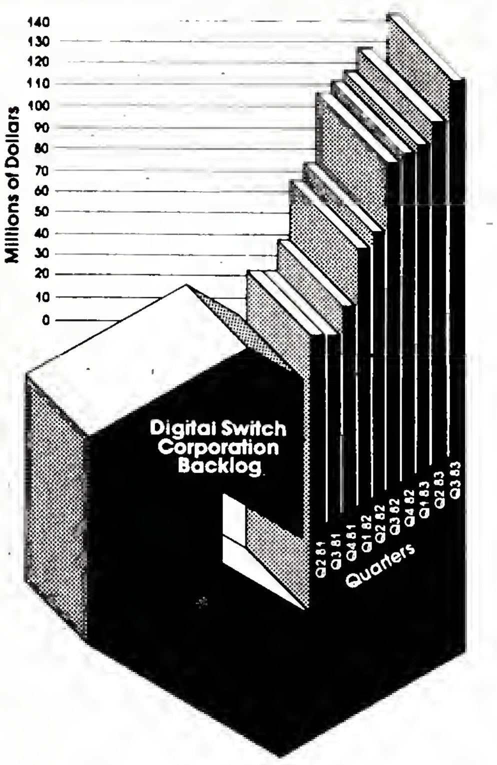

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225 West State Street
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- Providing software support for IMC, CICS, MVS, UNIX
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Salary on these positions ranges from $25,000 to $50,000. If you would like information on any of these positions or have an interest in the Florida marketplace, please call or send resume/letter to:

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Martin Marietta Aerospace

Data Processing Opportunities

Martin Marietta Aerospace, NASA's prime contractor for the Space Shuttle External Tank has immediate openings for Data Processing professionals. Because we actually manufacture the external tank, you'll get to see the actual results of your efforts.

COMPUTER PROGRAMMER/ANALYSTS

Immediate opportunities exist for individuals experienced in:

- **UNIVAC 1100**
  ASC11 COBOL
  DMS 1100
  DDL, SDDL, DMU
  DML, QLP
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  D/B Editor
- **APPLICATION EXPERIENCE**
  Shop floor control, Scheduling, Manufacturing, Inventory, Purchasing, Configuration Management, Quality, Engineering.
- **DATA BASE OPENINGS**
  Analyst, Design, Administrators with above hardware, software and applications experience.
- **CAD/CAM PROGRAMMER/ANALYST**
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These opportunities exist at our Michoud Assembly Facility located in suburban East New Orleans.

Qualified candidates interested in learning more about these opportunities at Martin Marietta should forward resumes, including salary history, to: Martin Marietta Aerospace, Denver Glazier, Dept. CW-130, P.O. Box 29304, New Orleans, Louisiana 70189. We are an equal opportunity employer, m/f/h.

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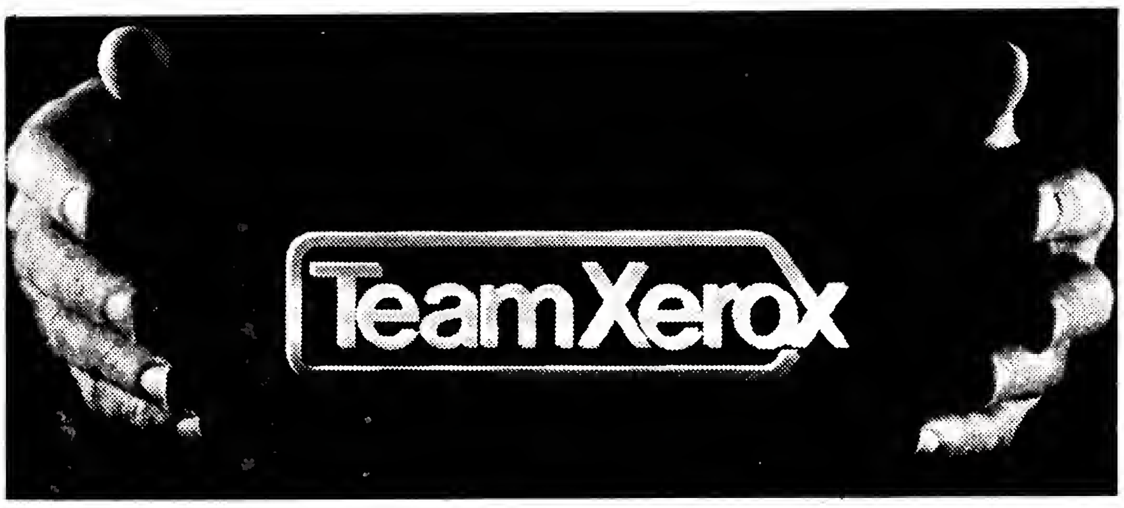

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Xerox feels the answers lie in a collaboration of resources. We call it TeamXerox. Our proven resources: product development, management skills, strategic planning and a firm foothold in today's office is part of the solution. You are the other. Your resourceful mind is the catalyst behind problem-solving innovations, and imaginative planning to keep technology one step ahead of demand.

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- 1-10 years product development experience with recent experience on Mini/Micro computers with office automation software.
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Qualified candidates must have U.S. citizenship or be registered alien.

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Jakarta, Indonesia

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Manager of Information Systems
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If recognition of your efforts is important to you, and if you satisfy any of the following needs, your interest in BGS is important to us!

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Lead a team of systems and programming specialists in defining and developing product extensions and new products. The ideal candidate will possess: a degree (MS preferred) in Computer Science, Mathematics, or a related field; a strong technical background in MVS, IMS, CICS; and a proven ability to manage systems professionals.

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Responsible for shaping the next generation of BGS network products. Position requires solid network communications, interpersonal, and analysis skills. Experience with voice networks, LAN's, SNA or network performance evaluation and design are real pluses.

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(IMS DB/DC, FASTPATH, IDMS)

Challenged to dig deeper into the way IMS or IDMS software performs? Take responsibility for an entire CRYSTAL modeling library product and future product line extensions. CRYSTAL is a software tool used to predict the performance of new applications. Database administration or support experience desired.

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Capable of designing extensions to our performance modeling and evaluation products for IMS or CICS workloads. Position requires: knowledge of IMS or CICS performance and capacity management methodologies; a technical degree; and experience with large programs developed and run under MVS/TSO, VM/CMS, TSO/SPF. Ability to analyze data using SAS a plus.

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Diversified and growing billion dollar financial holding company in the Florida Sunbelt is seeking highly motivated professionals to staff its Data Processing Division. Positions presently available include:

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Third shift opening. Minimum 2 years operations experience. Must have knowledge of IBM 4341, CICS, DOS/VSE JCL; previous experience with PDP 11/34 helpful.

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10 years experience with IBM hardware (4341), CICS, DOS/VSE. Management and supervisory experience working with multi companies in medium to large environment desired. Responsible for production control, instituting control procedures, forecasting equipment upgrades and configurations, large terminal network.

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Minimum 3 years experience including COBOL, BAL DOS/VSE, JCL and CICS.

SENIOR & LEAD PROGRAMMERS

Minimum 5 and 6 years experience respectively, including BAL, DOS/VSE, JCL and CICS. Responsible for implementation of new applications and maintenance of current applications.

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Minimum 8 years systems analyst experience with project management emphasis. Responsible for controlling the installation and maintenance of all banking related systems, coordinating communications with end users.

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Minimum 8 years experience with background in IBM COBOL, BAL, DOS/VSE, CICS, JCL. Responsible for controlling installation and maintenance of application software. Heavy experience with management of technical implementation of software desired.

The successful candidates will enjoy a challenging and dynamic environment with growth opportunity. Starting compensation will be attractive to proven professionals. Please send a detailed resume specifying desired position with salary history to:

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Maintain Mexican payroll system. Prepares program to process business and accounting data. Supervises programming personnel. Conducts training and refresher sessions for clients. Two years COBOL programming experience, six months on-line environment, one year Mexican payroll system required. Knowledge of Mexican labor law and other government regulations. Spanish language. Hewlett Packard 3000 experience. Degree in accounting, engineering, computer science, or business administration. $24,000 annual salary. Apply at Texas Employment Commission, Brownsville, Texas or send resume to Texas Employment Commission, TEC Building, Austin, Texas 78778, J.O.#2511162. AD PAID BY AN EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER.

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Executive Park
Suite 104
Asheville, NC 28801
(704) 258-9737

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B.S. degree in computer science, math, or closely related area. Master's degree preferred. Knowledge of BASIC, COBOL, FORTRAN, and RPG languages. Two (2) years work experience in programming/applications. Prefer prior teaching experience. Salary dependent upon education/experience, competitive benefits. Applications accepted until position filled. To apply contact: Personnel Office, Lake City Community College, Route 7, Box 378, Lake City, FL 32055, (904) 752-1822, ext. 313.

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THE NEW YORKER MAGAZINE

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A Southwest Fortune 500 Company has openings in Corporate Headquarters' large IBM main frame environment.

Systems Analyst — Responsible for designing and maintaining IMS Data Bases and providing technical support to application development teams. A four-year degree with 5-7 years DP experience, including 2 plus years with IMS DB/DC, is desired. CICS experience helpful.

Systems Programmer — Responsible for installing, maintaining and supporting IMS/VS (DB/DC) and related program products. Requires 2-5 years experience in an MVS environment installing and maintaining system software using SMP. BS in Computer Science or related field desired.

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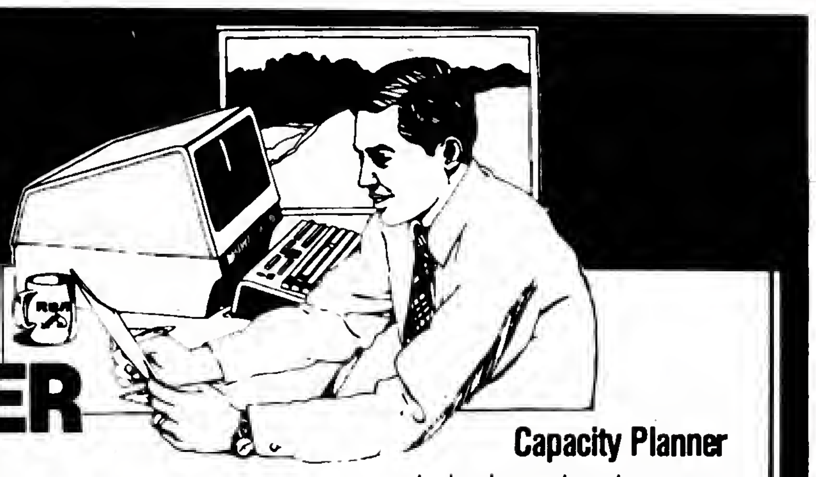

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Qualified candidates will be contacted at once to schedule interviews.

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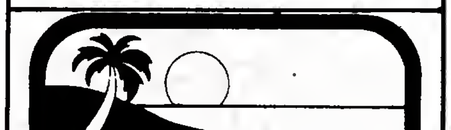

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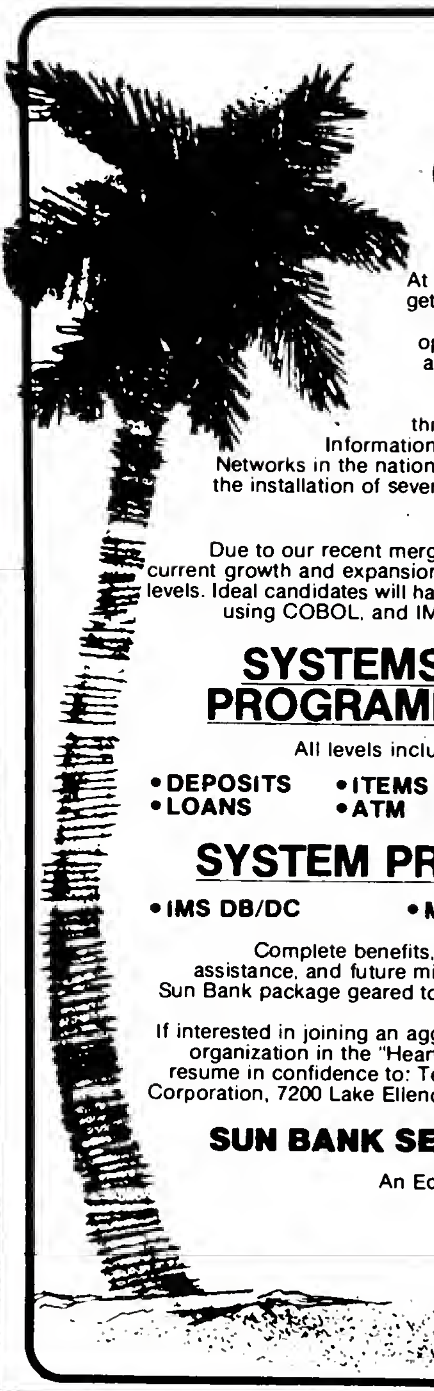

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All levels including Project Leaders

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APPLICATION PROGRAMMERS/ANALYSTS

Candidates who apply should have a college degree and 2-3 years of recent application design experience or programming experience in COBOL. Applicants who do not hold a degree may qualify if they have 6-7 years recent appropriate experience. The most desirable experience will have been in designing general business applications or designing code for general business applications utilizing both batch and on-line environments. Supplemental experience in either SAS or EASYTRIEVE is also desirable.

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Candidates who apply should have a college degree and 3-4 years of recent system programmer experience in any of the above areas. Applicants who do not possess a degree may qualify if they have 7-8 years of recent system programming experience. The experience may be as a specialist in any of the above product areas.

Candidates interested in a career opportunity with a modern sophisticated data processing facility located in Central New Jersey, close to Princeton University and other top rated schools as well as historic and cultural events, should submit a resume with salary history in confidence to:

New Jersey Department of Labor
Office of Personnel Services
Room 1213
John Fitch Plaza
Trenton, NJ 08625
Attn: Glenn Christiansen

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This position provides an excellent opportunity for professional growth and development within a highly sophisticated and dynamic data processing environment which includes a Tandem Non-stop II, 3 IBM 3033's, OS/MVS, JES3, IMS DB/DC, and CICS.

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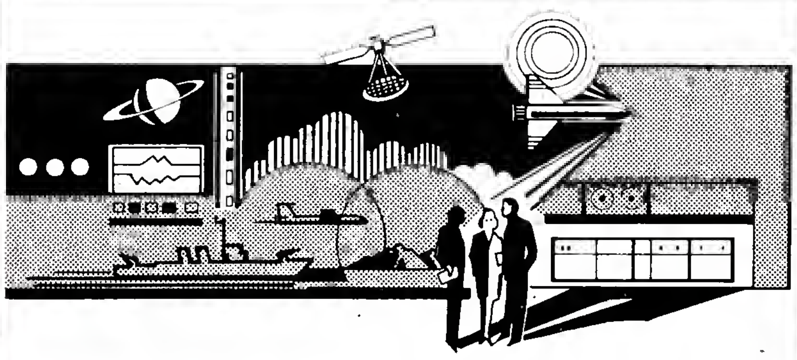

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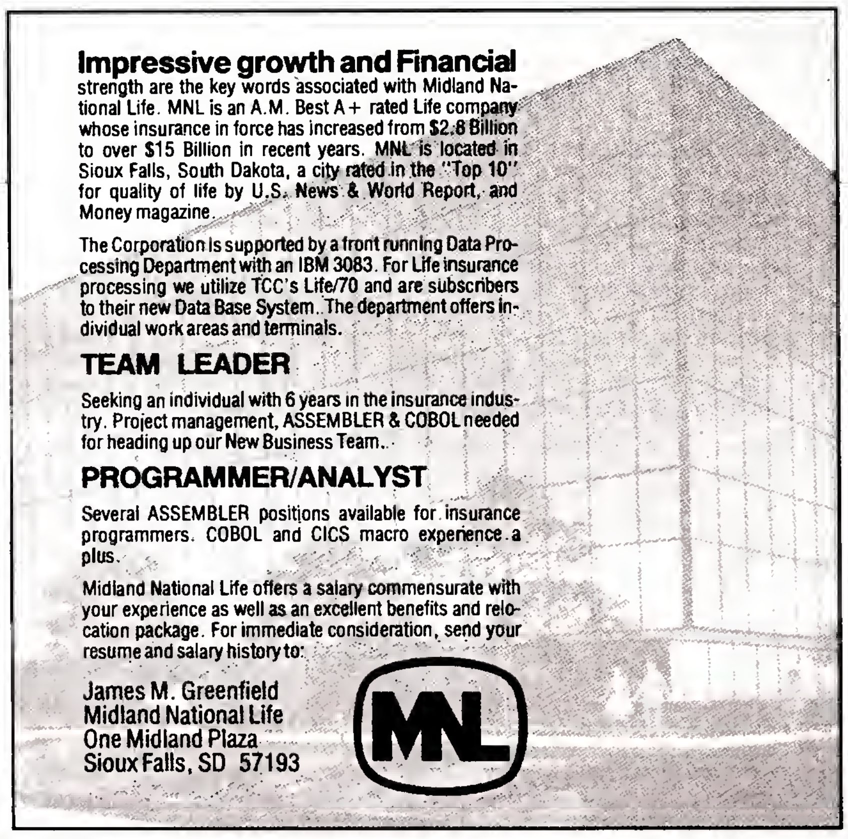

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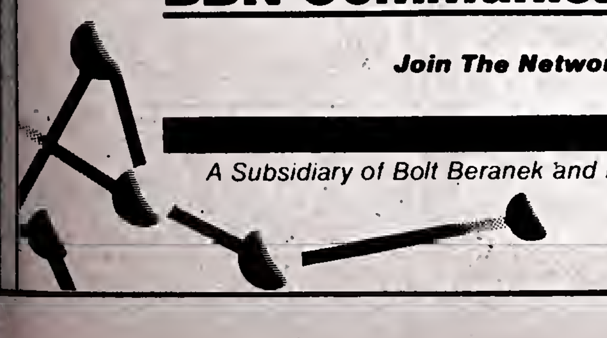

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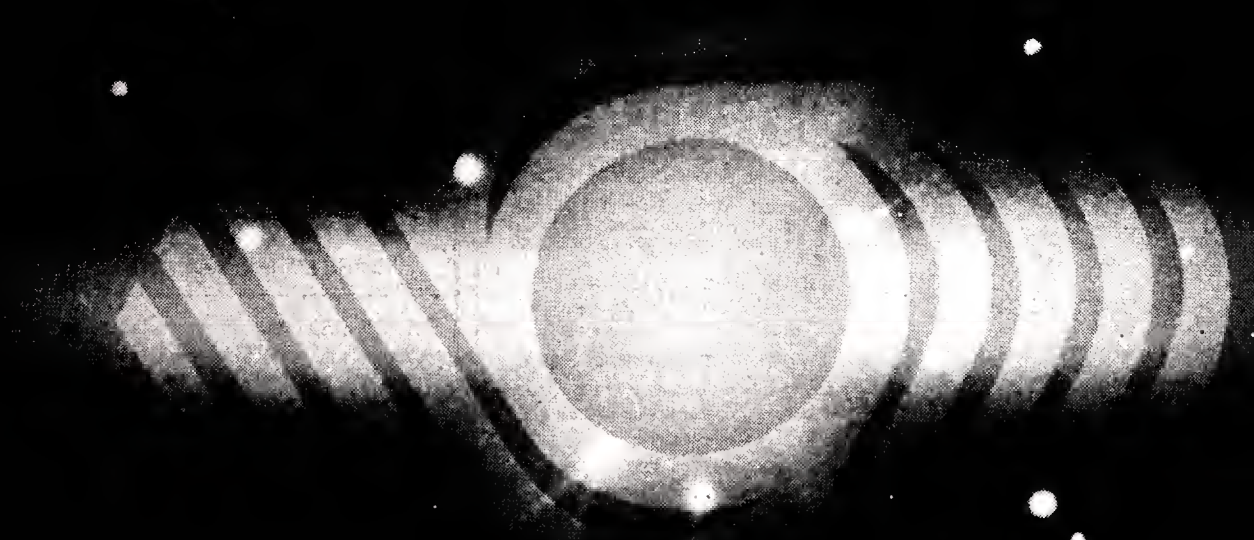

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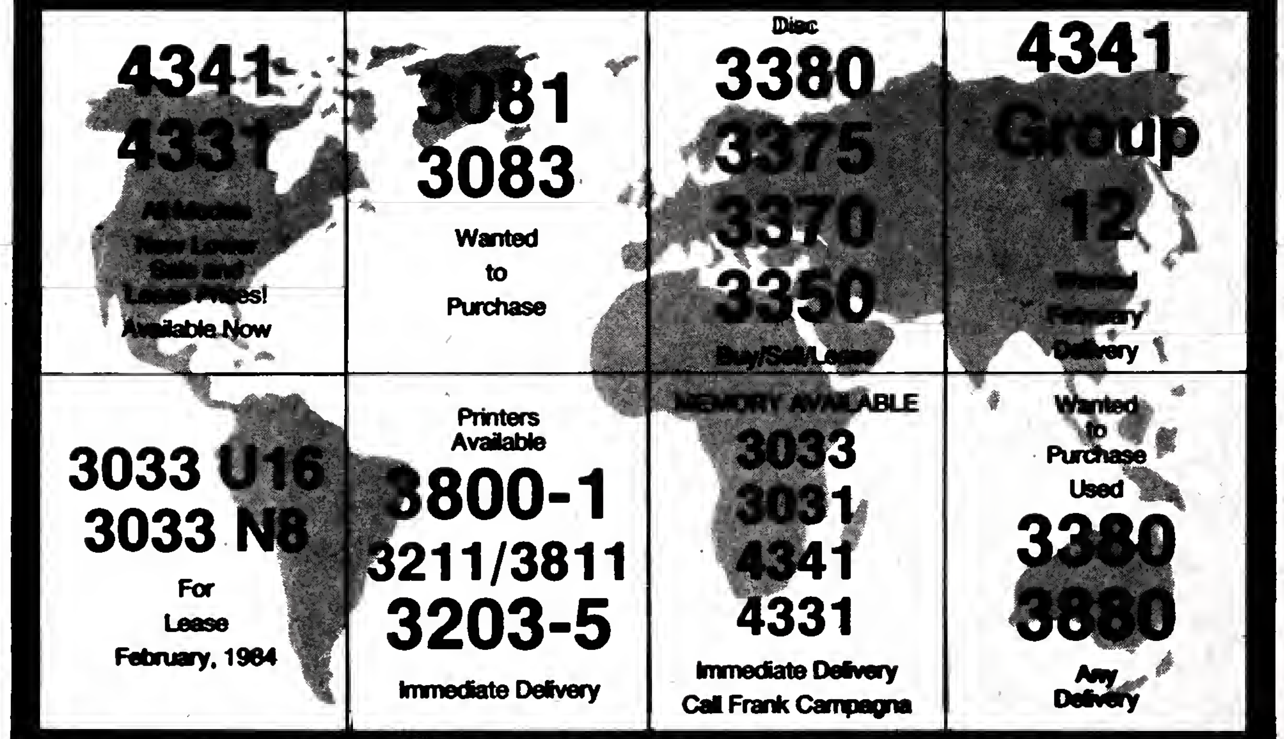

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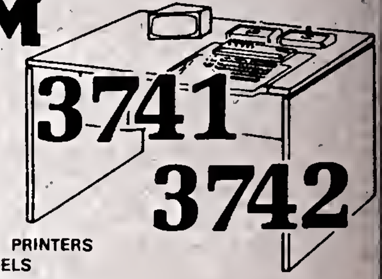

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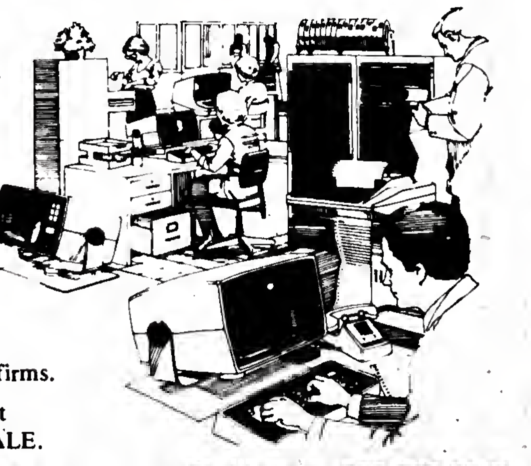

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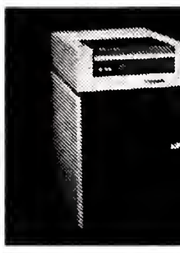

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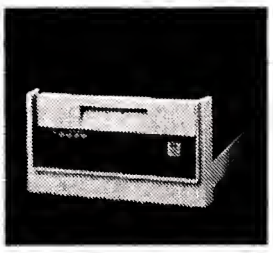

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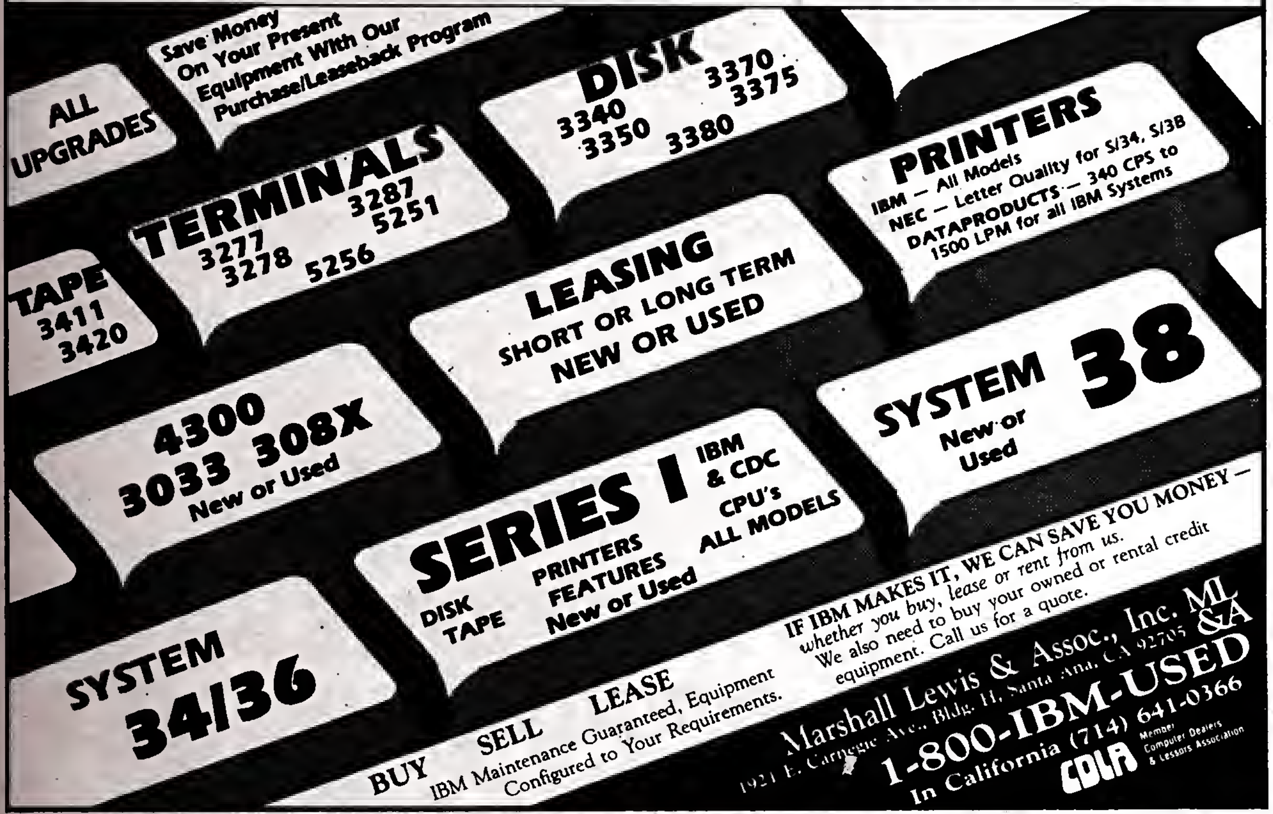
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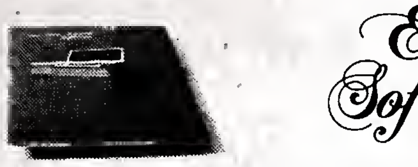

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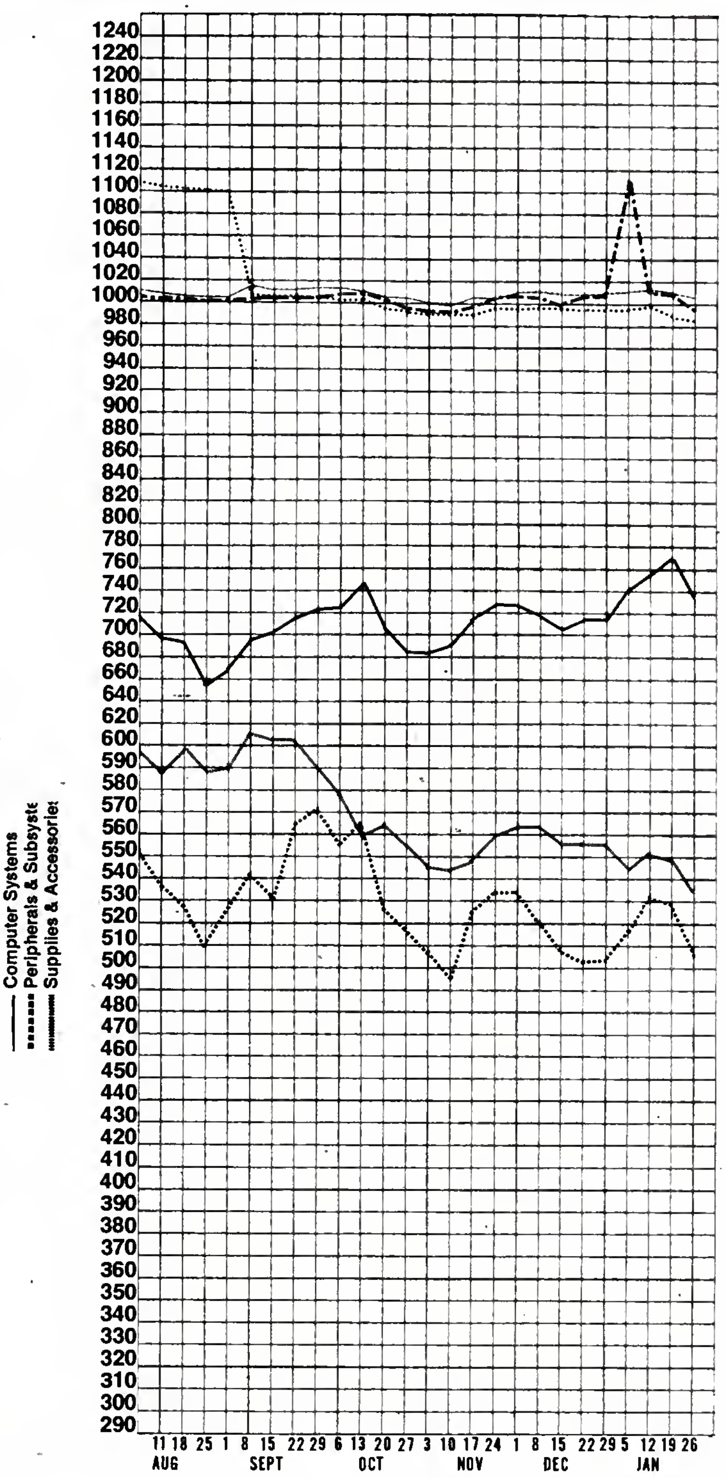

Computerworld Stock Trading Summary

TRADE QUOTES

All statistics compiled, computed and formatted by TRADE QUOTES, INC Cambridge, Mass 02139

CLOSING PRICES WEDNESDAY, JANUARY 25, 1984

COMPUTER SYSTEMS

EXCH		1983-84 RANGE (1)	CLOSE JAN 25 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	ALPHA MICROSYSTEMS	11- 24	14 1/2	-2 1/2	-14.7
O	ALTOS COMPUTER SYST	8- 28	11 1/4	- 1/4	-2.1
A	AMDAHL CORP	9- 30	18 3/8	-1 1/8	-5.7
O	APPLE COMPUTER INC	18- 63	27	-1 3/4	-6.0
N	AT&T	60- 70	65 3/4	- 7/8	-1.3
N	BURROUGHS CORP	28- 58	51 3/4	+ 1/2	+0.9
O	COMPUTER AUTOMATION	6- 17	8 3/4	- 1/2	-5.4
A	COMPUTER CONSOLES	8- 26	18	- 5/8	-3.3
N	CONTROL DATA CORP	21- 62	47	-1	-2.0
O	CONVERGENT TECHNOL	18- 41	23 3/4	-2 5/8	-8.9
N	CRAY RESEARCH INC	20- 58	52 7/8	-4 7/8	-8.4
N	DATA GENERAL CORP	10- 47	45 1/4	-1 3/4	-3.7
N	DATAPOINT CORP	11- 36	23 1/2	-3 1/4	-12.1
N	DIGITAL EQUIPMENT	62-132	90	+1 3/8	+1.5
A	EECO INC	6- 16	13 5/8	- 1/8	-0.9
N	ELECTRONIC ASSOC.	5- 15	8 3/8	- 1/4	-2.8
N	FLOATING POINT SYST	16- 44	32	-2 1/4	-6.5
N	FOXBORO	22- 47	37	-2	-5.1
O	GENERAL AUTOMATION	3- 16	12	-1 3/8	-10.2
N	GOULD INC	26- 44	34 1/8	-1 3/8	-3.8
N	HARRIS CORP	20- 51	41 1/4	- 5/8	-1.4
N	HEWLETT-PACKARD CO	22- 48	42 1/8	-2 1/2	-5.6
N	HONEYWELL INC	60-138	118	-10 3/4	-8.3
N	IBM	57-134	115 3/8	-5 1/8	-4.2
O	IPL SYSTEMS INC	5- 14	5	- 3/4	-13.0
N	M/A-COM INC	19- 35	19 3/4	-1 1/8	-5.3
O	MAGNUSON COMP SYSTS	1- 5	3/8	0	0.0
N	MANAGEMENT ASSIST	7- 23	22 1/8	+1 3/8	+6.6
N	MATSUSHITA ELEC(ADR)	47- 86	82 1/8	+ 5/8	+0.7
N	MODULAR COMPUTER SYS	6- 16	9	0	0.0
N	MOHAWK DATA SCI	10- 19	14 7/8	-1 1/2	-9.1
N	MOTOROLA INC	82-148	126 1/4	-7	-5.2
N	NAT'L SEMICONDUCTOR	15- 60	16 3/8	-2	-10.8
N	NBI INC	21- 51	26	+ 1/8	+0.4
N	NCR	39-136	121 3/4	-8 1/4	-6.3
N	PERKIN-ELMER	17- 37	28 3/8	-2 3/8	-7.7
N	PRIME COMPUTER INC	11- 30	19 5/8	-1 1/2	-7.1
N	SPERRY CORP	21- 50	46 3/4	-1 1/2	-3.1
O	TANDEM COMPUTERS INC	14- 40	34 3/4	-2 3/4	-7.3
N	TANDY CORP	34- 65	36 1/8	-1 1/2	-3.9
O	TELEVIDEO SYSTEMS	14- 41	14 3/8	-1 5/8	-10.1
O	TELXON CORP	9- 16	10 3/4	+1	+10.2
N	TEXAS INSTRUMENTS	71-176	136 1/4	-4 7/8	-3.4
A	ULTIMATE CORP	8- 24	18 5/8	-1 3/4	-8.5
O	VECTOR GRAPHICS INC	2- 14	2 3/8	+ 3/8	+18.7
A	WANG LABS "B"	13- 42	31 5/8	-3 3/8	-9.6
A	WANG LABS "C"	11- 42	31 3/8	-3 3/8	-9.7
N	XEROX CORP	35- 52	48 3/4	-1	-2.0

LEASING COMPANIES

EXCH		1983-84 RANGE (1)	CLOSE JAN 25 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	BOOTHE FINANCIAL CP	11- 37	35 1/2	+1 1/2	+4.4
N	COMDISCO INC	7- 42	13 5/8	-1	-6.8
O	CONTINENTAL INFO SYS	3- 16	7 1/2	- 1/4	-3.2
N	DPF INC	5- 15	13 3/4	-1	-6.7
N	U.S. LEASING	18- 47	36 3/8	- 1/4	-0.6

COMPONENTS

EXCH		1983-84 RANGE (1)	CLOSE JAN 25 1984	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADVANCED MICRO DEV	13- 37	33 1/4	-2 1/2	-6.9
O	ADV'D SEMICONDUCTOR	12- 38	34	-2 3/4	-7.4
N	ANALOG DEVICES INC	18- 42	33 5/8	-4	-10.6
O	ANALOGIC CORP	20- 27	22	-1 1/4	-5.3
N	APPLIED MAGNETICS CP	19- 37	23	-4 1/4	-15.5
N	TERADYNE	14- 39	33 1/2	-5	-12.9

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON;
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

EXCH		1983-84 RANGE (1)	CLOSE JAN 25 1984	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 8	3 3/4	0	0.0
O	ADVANCED SYSTEMS INC	6- 22	19 1/2	- 1/4	-1.2
O	AGS COMPUTERS INC	7- 32	29 1/4	- 1/2	-1.6
O	AMERICAN SOFTWARE	17- 31	17 3/4	-1	-5.3
N	ANACOMP INC	5- 23	6 1/4	+ 5/8	+11.1
O	ANALYSTS INTL CORP	5- 20	12 1/4	- 1/2	-3.9
A	APPLIED DATA RES.	8- 37	28 3/8	-2 1/4	-7.3
O	ASK COMPUTER SYSTEMS	6- 21	18 1/2	- 1/2	-2.6
B	ASTRADYNE COMP IND	1- 7	2 3/8	- 3/8	-13.6
N	AUTOMATIC DATA PROC	21- 44	36 3/4	-1 1/2	-3.9
O	CGA COMPUTER ASSOC	5- 17	11 1/2	- 1/2	-4.1
O	COMPUTER ASSOC INT'L	6- 35	25	-2 1/4	-8.2
O	COMPUTER HORIZONS	8- 20	14 3/4	- 1/2	-3.2
O	COMPUTER NETWORK	4- 10	7 1/2	+ 1/4	+3.4
N	COMPUTER SCIENCES	11- 23	20	-1	-4.7
O	COMPUTER TASK GROUP	8- 22	15	-1 1/2	-9.0
O	COMPUTER USAGE	2- 22	11	- 7/8	-7.3
O	COMPUTONE SYSTEMS	5- 38	7 1/4	- 1/4	-3.3
O	COMSERV CORP	5- 20	7 1/4	+ 1/4	+3.5
O	COMSHARE	7- 14	10 3/8	-1 3/8	-11.7
N	CULLINET SOFTWARE	12- 50	37 1/8	-2	-5.1
O	CYCARE SYSTEMS INC	9- 27	18 1/2	- 1/2	-2.6
N	ELECTRONIC DATA SYST	10- 42	31 1/4	-1 1/4	-3.8
O	HOGAN SYSTEM INC	19- 53	19 3/4	-2 5/8	-11.7
N	GENERAL ELECTRIC CO	45- 59	54	-2 3/4	-4.8
N	GTE CORP	39- 48	42 3/4	- 1/4	-0.5
N	INFORMATICS INC	10- 34	21 3/4	-1	-4.3
O	INFOTRON SYSTEMS COR	25- 43	37 1/2	-1 1/2	-3.8
O	KEANE ASSOCIATES	4- 15	8	- 1/2	-5.8
A	LOGICON	8- 31	29 1/2	0	0.0
O	MCI COMMUNICATIONS	13- 34	14 5/8	-1 1/8	-7.1
O	MNGT SCI AMER INC	8- 33	20 1/4	-1 1/2	-6.8
O	MATHEMATICAL APP GRP	10- 22	11 1/2	0	0.0
O	MICOM SYSTEMS INC	25- 50	41 3/4	-3	-6.7
O	MONCHIK-WEBER CP	8- 22	8	-1	-11.1
O	NATIONAL DATA CORP	5- 26	19 1/2	0	0.0
O	ON-LINE SOFTWARE INT	16- 27	16	-1	-5.8
O	PANSOPHIC SYSTEMS	8- 30	18 3/4	- 5/8	-3.2
N	PLANNING RESEARCH	6- 21	15 1/4	-1	-6.1
O	POLICY MGMT SYSTS CP	15- 35	26 3/4	-2	-6.9
O	PROGRAMMING & SYS	1- 8	4 7/8	- 1/4	-4.8
O	REYNOLDS & REYNOLD	17- 53	36 1/2	-3	-7.5
O	SEI CORP	11- 34	24	-1 1/2	-5.8
O	SHARED MEDICAL SYST	13- 43	29 1/2	-1 3/4	-5.5
O	SCIENTIFIC COMPUTERS	6- 14	11 1/4	+ 1/4	+2.2
O	SOFTWARE AG	5- 17	12 1/4	- 7/8	-6.6
N	TYMSHARE INC	12- 30	19 7/8	- 5/8	-3.0
A	URS CORP	5- 18	14 1/8	- 5/8	-4.2
N	WYLY CORP	7- 17	11 1/8	+ 1/2	+4.7

PERIPHERALS & SUBSYSTEMS

EXCH		1983-84 RANGE (1)	CLOSE JAN 25 1984	WEEK NET CHNGE	WEEK PCT CHNGE
P	AM INTERNATIONAL	2- 7	4	- 3/8	-8.5
A	ANDERSON JACOBSON	9- 26	10 1/4	0	0.0
O	AUTO-TROL TECHNOLOGY	8- 29	23 1/2	-1 1/8	-4.5
O	BANCTEC INC	7- 33	13 3/4	-1 1/4	-8.3
A	BEEHIVE INT'L	4- 15	8 5/8	- 3/8	-4.1
N	BOLT,BERANEK & NEW	5- 30	22 3/4	-1 1/4	-5.2
O	CAMBEX CORP	1- 4	2	+ 1/8	+6.6
N	CENTRONICS DATA COMP	6- 28	16 7/8	+ 3/4	+4.6
A	CETEC CORP	4- 12	10 3/8	- 1/2	-4.5
O	COGNITRONICS	2- 20	10 7/8	+ 1/2	+4.8
O	COMPUTER DEVICES INC	1- 21	7/8	-	-6.7
O	COMPUTER TRANSCEIVER	4- 12	4 1/8	- 1/8	-2.9
N	COMPUTERVISION CORP	19- 53	43	-2 1/4	-4.9
N	CONRAC CORP	16- 38	16	-1	-5.8
A	DATAPRODUCTS CORP	16- 41	28 1/8	-2 3/8	-7.7
A	DATARAM CORP	5- 12	10	- 5/8	-5.8
O	DATA SWITCH CORP	13- 41	29 1/2	-2 1/2	-7.8
O	DATUM INC	2- 17	7 7/8	- 1/8	-1.5
O	DECISION DATA COMPUT	3- 16	10 1/2	-1 3/8	-11.5
O	DOCUTEL-OLIVETTI	11- 39	14 1/2	+1 1/8	+8.4
N	ELECTRONIC M & M	5- 11	7 3/4	+ 1/8	+1.6
O	ENDATA, INC	11- 16	12	- 1/4	-2.0
O	EVANS & SUTHERLAND	18- 50	26 1/4	-2 1/2	-8.6
O	GANDALF TECHNOLOGIES	9- 22	10 7/8	+1 1/8	+11.5
N	GEN'L DATA COMM IND	6- 33	31 1/4	+ 3/8	+1.2
O	GREAT SOUTHWEST IND	1- 6	3/4	0	0.0
N	HAZELTINE CORP	7- 31	24 1/2	-1 1/4	-4.8
O	ICOT CORP	3- 10	4 5/8	+ 3/8	+8.8
O	INFORMATION INTL INC	10- 22	13	0	0.0
O	INFORMATION SCIENCE	12- 17	13 1/2	0	0.0
O	INTEL CORP	11- 45	37	-2 1/4	-5.7
O	IPL SYSTEMS INC	5- 14	5	- 3/4	-13.0
A	LUNDY ELECTRONICS	7- 19	10 7/8	-1	-8.4
O	MEGADATA CORP	9- 15	11 1/2	0	0.0
A	MSI DATA CORP	16- 37	19 1/8	-1 1/4	-6.1
N	NASHUA CORP	9- 29	24 3/4	+ 5/8	+2.5
O	NETWORK SYSTEMS CORP	8- 34	21 1/2	-2 1/2	-10.4
N	NO AMERICAN PHILIPS	47- 79	73 5/8	-4 7/8	-6.2
N	NORTHERN TELECOM LTD	22- 49	36	-2 5/8	-6.7
O	OMEX	2- 6	1 3/4	- 1/2	-22.2
N	PARADYNE CORP	14- 30	16 1/8	-1 7/8	-10.4
A	PENRIL CORP	7- 14	12 7/8	- 3/8	-2.8
O	PHOENIX AMERICAN INC	7- 17	10	-1 1/4	-11.1
N	PLESSEY CO (ADR)	26- 41	31 1/4	+ 1/2	+1.6
O	PRINTRONIX INC	23- 34	26	-1 1/2	-5.4
O	RAMTEK CORP	9- 26	11 1/4	- 1/2	-4.2
N	RAYTHEON CO	42- 58	45	-3	-6.2
N	RECOGNITION EQUIP	4- 17	13 1/4	- 3/8	-2.7
N	ROLM CORP	40- 80	45 5/8	-1 7/8	-3.9
N	SANDERS ASSOCIATES	46-120	46	-1 1/4	-2.6
O	SCAN DATA	1- 3	5/8	0	0.0
O	SCAN-TRON CORP	12- 19	18 1/4	0	0.0
N	SCIENTIFIC ATLANTA	15- 23	14 1/2	- 1/2	-3.3
N	STORAGE TECHNOLOGY	12- 33	11 3/4	-2 1/4	-16.0
O	SYKES DATATRONICS	4- 27	4 1/4	- 1/8	-2.8
O	SYSTEMS & COMP TECH	24- 39	23 3/4	-4 1/2	-15.9
A	T BAR INC	7- 17	10 1/4	+ 1/8	+1.2
A	TAB PRODUCTS CO	8- 30	25	-1 1/4	-4.7
O	TANDON CORP	17- 35	16 1/2	-2 1/4	-12.0
A	TEC INC	6- 12	9 3/8	- 1/8	-1.3
N	TEKTRONIX INC	34- 87	73	-1 3/8	-1.8
N	TELEX	5- 32	24 3/8	-2 5/8	-9.7
O	TESDATA SYSTEMS CP	3- 17	6 3/4	- 7/8	-11.4
N	TIMEPLEX INC	7- 29	18	-3 5/8	-16.7
O	VISUAL TECHNOLOGY	9- 26	18 1/4	-1 1/2	-7.5

SUPPLIES & ACCESSORIES

EXCH		1983-84 RANGE (1)	CLOSE JAN 25 1984	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN BUS PRODS	7- 23	20	-1 3/8	-6.4
N	BARRY WRIGHT	13- 33	29 1/2	-3	-9.2
A	DUPLEX PRODUCTS INC	12- 27	26 3/4	+ 1/4	+0.9
N	ENNIS BUS. FORMS	6- 28	23 1/4	0	0.0
N	3M COMPANY	49- 90	77 5/8	-2 5/8	-3.2
N	MOORE CORP LTD	26- 51	42 1/4	0	0.0
O	STANDARD REGISTER	11- 34	32 1/4	- 1/2	-1.5
N	WALLACE BUS FORMS	11- 33	27 7/8	- 3/8	-1.3

15 pointed questions to ask MSA or any software supplier

These questions will help you when you sit down with individual software companies.

They're tough questions. Relevant ones. And any supplier who is worth his salt should be able to answer them without backpedaling.

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We'll answer all these questions to your satisfaction—plus any others you may have.

In fact, we're probably the best equipped to answer them. Because MSA is *the* software company. We offer the most complete line of totally integrated systems in the software industry, including financial, human resource and manufacturing.

So you avoid the headache of trying to tie together individual systems. (And the even bigger headache of adding to them.)

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Our technical edge comes from experience

Staying ahead is easier for a company that's steeped in software technology. MSA has spent years developing, refining, testing and enhancing our systems.

This year alone, we'll invest $25 million to make sure all our systems are technologically razor sharp. That gives us a decided advantage over flash-in-the-pan technology that may not have the bug-free logic of a more experienced system.

It also gives you a decided advantage over "custom" systems you have to update yourself.

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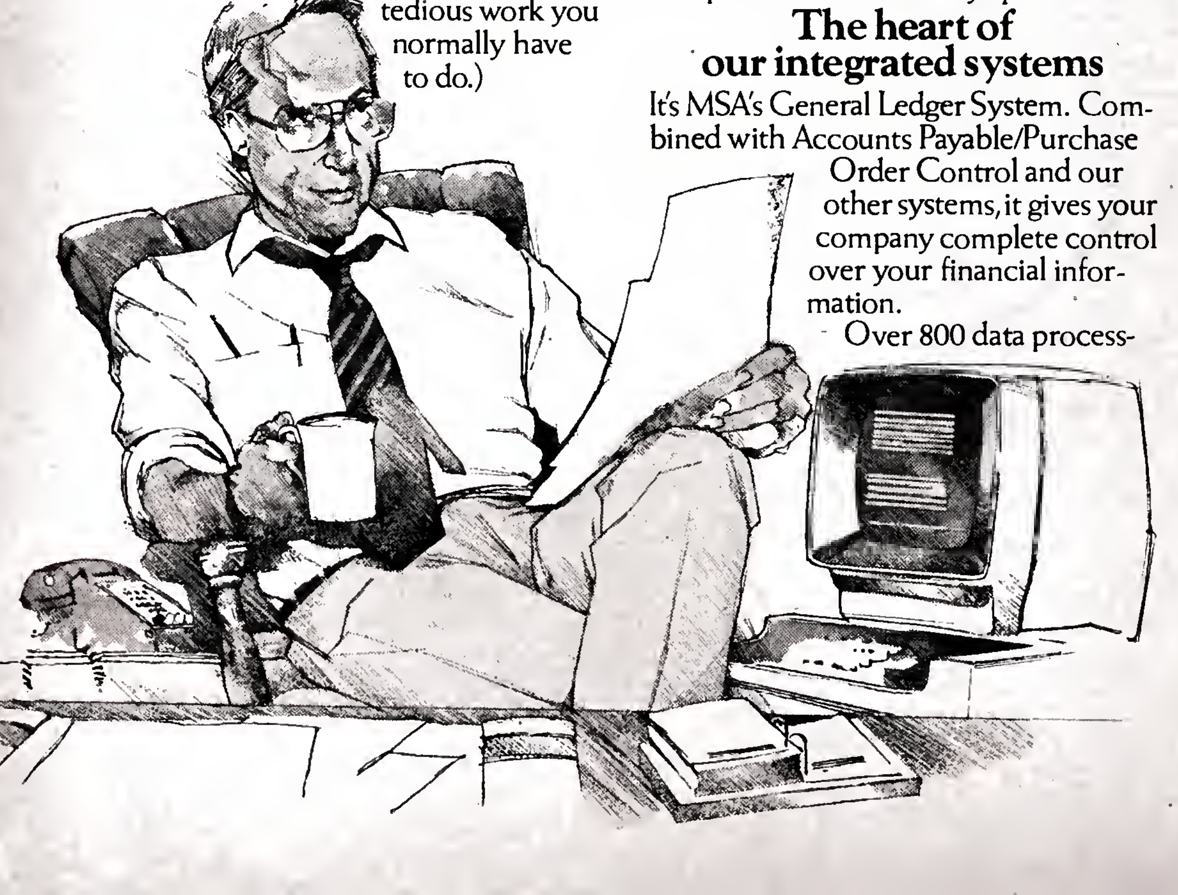
And making sure it reflects changes in accounting procedures and government regulations, including 401(k), TEFRA, and FAS52. (That eliminates a lot of tedious work you normally have to do.)



Save this box. It can help you make an intelligent software decision.

1. Can you offer us a complete range of software systems designed to work together?
Or will we have to piece together a patchwork of systems?

2. Are your systems just record keepers, or can they really help us make decisions?
Can we pull together information from any of our integrated systems? In exactly the form we want it?

3. Can you provide business software for both mainframe and microcomputers?
Do you develop this software yourself or do you simply market it for another company?

4. Are your systems truly online so all of our information is current?
How many of your systems are online? How secure are they?

5. Will my company have to be the one that discovers the bugs in your brand new system?
Just how long have your systems actually been used, and how have they been tested?

6. Will you update your systems as technology advances and regulations change?
What are some of your most recent updates? Will you keep us current on regulatory changes?

7. Do your systems really do everything you say they will?
Or will we have to change them or add to them to get the features we want?

8. How long have you been in business?
What are your revenues? What is your growth record? Where will your company be five years from now?

9. How many systems has your company installed?
How many of these were installed in the past six months? How many of your earlier customers are still using —and liking—your systems?

10. Do your financial systems handle unlimited foreign currencies?
Do your financial systems use a common set of currency exchange rates?

11. Can you link our executives' computers directly to the mainframe—so they can get their own information?
Is that software available right now?

12. How will you make sure our own people thoroughly understand your system?
Do you have educational centers near us, or will we have to travel all the way across the country to find one? Will you be there to help during installation and after?

13. How many of your people specialize in software for my industry?
How many accountants work for you? Human resource specialists? Manufacturing experts?

14. Do your systems have built-in features that make them easier to use?
What happens if someone needs help figuring out a feature? Do you have online documentation that's easy to understand?

15. As my business changes will your system be flexible enough to change with it?
Or will we have to pay a lot to revamp it? Or even regenerate it?

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CW17a(1/30/84)

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